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TOTAL OWNERSHIP COSTS FOR THE MARINE CORPS PROCUREMENT PROGRAMS

by

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December 1999

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This thesis responds to Marine Corps Systems Command (MARCORSYSCOM) Program Managers' desire to track Total Ownership Costs (TOC) for the procurement programs in the Marine Corps. DoD has adopted TOC as a means of reducing costs to generate the necessary resources for critical modernization and recapitalization. TOC serves as a strategic goal that focuses the efforts of the acquisition community on understanding Life Cycle Cost (LCC) and the support infrastructure for existing and future weapon programs. This study examined the budget process, funding flow and appropriations along with major appropriation categories, and tracking TOC in the major appropriations. Data was collected from historical accounting records, Budget Estimate Submission (BES) to Congress, and other supporting systems. The major finding of this study is that TOC may be tracked in the major appropriation categories of RDT&E and Procurement with limited administrative accounting modifications. Personnel and funding restrictions prevent actual cost for the Military Personnel appropriations from being attained, but estimates can be used with a reasonable degree of certainty. The Operations and Maintenance appropriations will continue to be the most difficult to track for TOC. However, the introduction of new accounting and supply systems, plus awareness, will improve the ability to track TOC in this appropriation.

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TOTAL OWNERSHIP COSTS FOR THE MARINE CORPS PROCUREMENT PROGRAMS

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ABSTRACT

This thesis responds to Marine Corps Systems Command (MARCORSYSCOM) Program Managers' desire to track Total Ownership Costs (TOC) for the procurement programs in the Marine Corps. DoD has adopted TOC as a means of reducing costs to generate the necessary resources for critical modernization and recapitalization. TOC serves as a strategic goal that focuses the efforts of the acquisition community on understanding Life Cycle Cost (LCC) and the support infrastructure for existing and future weapon programs. This study examined the budget process, funding flow and appropriations along with major appropriation categories, and tracking TOC in the major appropriations. Data was collected from historical accounting records, Budget Estimate Submission (BES) to Congress, and other supporting systems. The major finding of this study is that TOC may be tracked in the major appropriation categories of RDT&E and Procurement with limited administrative accounting modifications. Personnel and funding restrictions prevent actual cost for the Military Personnel appropriations from being attained, but estimates can be used with a reasonable degree of certainty. The Operations and Maintenance appropriations will continue to be the most difficult to track for TOC. However, the introduction of new accounting and supply systems, plus awareness, will improve the ability to track TOC in this appropriation.

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I. INTRODUCTION

A. GENERAL DESCRIPTION

Total Ownership Costs (TOC) is defined by the Department of Defense (DoD) thus:

> DoD TOC is the sum of all financial resources necessary to organize, equip, sustain and operate military forces sufficient to meet national goals in compliance with all laws, all policies applicable to DoD, all standards in effect for readiness, safety, and quality of life, and all other official measures of performance for DoD and its components. DoD TOC is comprised of costs to research, develop, acquire, own, operate, and dispose of weapon and support systems, other equipment and real property, the cost to recruit, retain, separate and otherwise support military and civilian personnel, and all other costs of business operations of the DoD [Ref. 1].

This thesis will analyze TOC for the Marine Corps procurement programs. With the definition that DoD has provided, the first step in examining TOC is to examine all the financial resources available to the Marine Corps for each fiscal year (FY). By establishing financial parameters for TOC, baselines can be established for framing the analysis. Before starting the analysis, one needs an understanding of the budget process, the funding flow and the appropriations that provide the financial resources to the Marine Corps. The next step is to further break down the major appropriations and trace the funding to a project level. With these steps taken, the analysis can begin to determine the feasibility of tracking TOC for the Marine Corps procurement programs.

B. BACKGROUND

As budgets and resources continue to decline, DoD has adopted TOC as a means of reducing costs to generate the necessary resources for critical modernization and recapitalization. TOC serves as a strategic goal that focuses the efforts of the acquisition community on understanding Life Cycle Cost (LCC) and the support infrastructure for existing and future weapon programs. The implementation of TOC as a pilot program by DoD in 1998 was due to the changing political and military environment.

In the Cold War era the Soviet threat was so great that DoD relied upon investment in weapons programs for the security of our nation. During these times, strong performance advantages made costs a dependent variable when developing new systems. The demise of the Soviet Union has left the United States as the only remaining superpower.

Entering into the post-Cold War era called for a reevaluation of DoD readiness to meet potential threats. This produced a scenario of regional conflicts and diminished direct military threats to the United States. A downsizing of DoD was ordered, which produced a change in investment strategy.

The early 1990's saw acquisition reform take hold. One of the greatest barriers to civil-military integration was changing from government unique specifications and standards to performance specifications. By the mid 1990's, DoD had adopted a more balanced strategy of investing in new weapons systems. Performance advantages were no longer the key to acquisition. In 1995, the Under Secretary of Defense (Acquisition and

Technology) (USD (A&T)) established total LCC as equal to performance with the introduction of Cost as an Independent Variable (CAIV) policy [Ref. 2].

The introduction of CAIV caused DoD to shift the focus from the cost of acquisition to TOC. Since 60-70% of a system's costs were incurred after initial deployment, new acquisitions were forced to examine the overall LCC. This change in philosophy meant that sustainment costs now receive greater attention in the design of a new program.

A major question in the acquisition of any new program is what does it cost? Many models attempt to estimate the various costs associated with research, development, procurement, operating, maintaining, and disposal of any program, but only historical costs can provide an accurate dollar amount. This is a cumbersome task since each service within DoD has multiple accounting systems. This forced analysts to track cost through multiple accounting and other non-accounting systems (Asset Tracking Logistics and Supply System (ATLASS), Supported Activity Supply System (SASSY), and Marine Corps Integrated Maintenance Management System (MIMMS)).

C. RESEARCH QUESTIONS

The following research questions were used to guide this thesis:

Primary Research Question: Is it possible to capture TOC for Marine Corps Procurement Programs?

Secondary Research Questions:

1. How can funding be tracked from the Presidential Budget through the funding process down to the Marine Corps Accounting System?
2. How will Research, Development, Test, and Evaluation (RDT&E) costs be assigned to the Procurement Programs?
3. How will Procurement costs be assigned to the Procurement Programs?
4. How will Military Personnel (MILPERS) costs be assigned to the Procurement Programs?
5. How will Operations and Maintenance (O&M) costs be assigned to the Procurement Programs?

D. SCOPE OF THESIS

The scope of this thesis will be to examine the major appropriations (RDT&E, Procurement, Operations and Maintenance, Military Personnel, Military Construction/Family Housing and Other appropriations) that make up the financial resources for the Marine Corps. Historical data for all Department of the Navy (DoN) (Code 17) appropriations will be collected starting with FY 88 and continuing through FY 99. DoD (Code 97) will be collected based on the DoD accounting regulations.

Scope limitations will be encountered due to time constraints (Military Construction/Family Housing and Other Appropriations are omitted), restrictions on the ability of the accounting system to track costs down to the Table of Authorized Material Control Number (TAMCN) and National Stock Number (NSN) level, and funding from outside the Marine Corps. Examples of funding not included in this research are the

Flying Hour Program, Joint Chiefs of Staff (JCS) funded air and sea transportation, etc. These scope limitations should not detract from general findings and conclusions of the thesis research.

E. METHODOLOGY

The methodology used in this thesis research will consist of the following steps.

1. Conduct a literature search of the Internet, books, technical manuals; conduct personal interviews; and review other information resources.
2. Identify what funding is provided for each appropriation using Budget Estimates and Justifications submitted to Congress, which give prior year actual amounts and authorizations contained within the Accounting System.
3. Conduct a thorough review of each appropriation and how costs are collected.
4. Collect historical data from the Standard Accounting, Budgeting, Reporting System (SABRS) and use supporting systems to compare for consistency.
5. Conduct research on how information is entered into SABRS and whether this information is detailed enough to meet TOC requirements.

F. ORGANIZATION OF STUDY

This thesis is divided into six chapters. Following the introduction, Chapter II provides background information on the budget, funding flow and appropriations. Chapter III groups the appropriations into six major appropriation categories and explains how each is subdivided. Chapter IV incorporates the processes and data described in the

previous two chapters for tracking TOC for the various procurement programs by major appropriation category. Chapter V provides a detailed analysis of the data gathered and Chapter VI will present a summary, conclusions, and recommendations.

II. BUDGET PROCESS, FUNDING FLOW, AND APPROPRIATIONS

A. INTRODUCTION

Chapter I defines TOC and provides the background for the thesis. Chapter I also describes the scope of the thesis along with its limitations, provides the research questions to be answered, methodology and the organization of study. This chapter gives a general overview of the budget process, funding flow, and appropriations the Marine Corps receives.

B. BUDGET PROCESS

With an ever-changing political, economic and military environment the DoD needs to remain flexible to meet the National Security Strategy (NSS). From this strategy the DoD develops a National Military Strategy (NMS) and allocates resources to meet future concerns. Once these have been established, the Secretary of Defense can publish the annual Defense Planning Guidance (DPG), which provides the services with policy guidance for their budget proposals.

The budget for the DoD is a cyclical process. The Planning, Programming, and Budgeting System (PPBS) provides the framework that enables the Military Departments and Defense Agencies to make future program decisions that meet the NMS. By looking at each phase of PPBS, one can better understand the process.

The Planning phase focuses on a NMS that supports U.S foreign policy for 2 to 7 years in the future. This encompasses the balance of military forces, modernization, and national resource limitations to meet this strategy. The primary output of this phase is the DPG.

The Programming phase focuses on DoD components developing programs consistent with the DPG. During this phase each component develops a six-year plan through the development of a Program Objectives Memorandum (POM) and the Future Years Defense Plan (FYDP). Program reviews are conducted to ensure an effective allocation of resources is maintained. The results are issued in the Program Decision Memoranda (PDM) [Ref 3].

The Budgeting phase focuses on detailed Budget Estimate Submission (BES) for the budget years of programs approved during the programming phase. These BES include the actual appropriation obligated for the prior year (PY), current year (CY) authorization and the budget year (BY) estimate. Figure 2.1 demonstrates the integration of the strategy and funding.

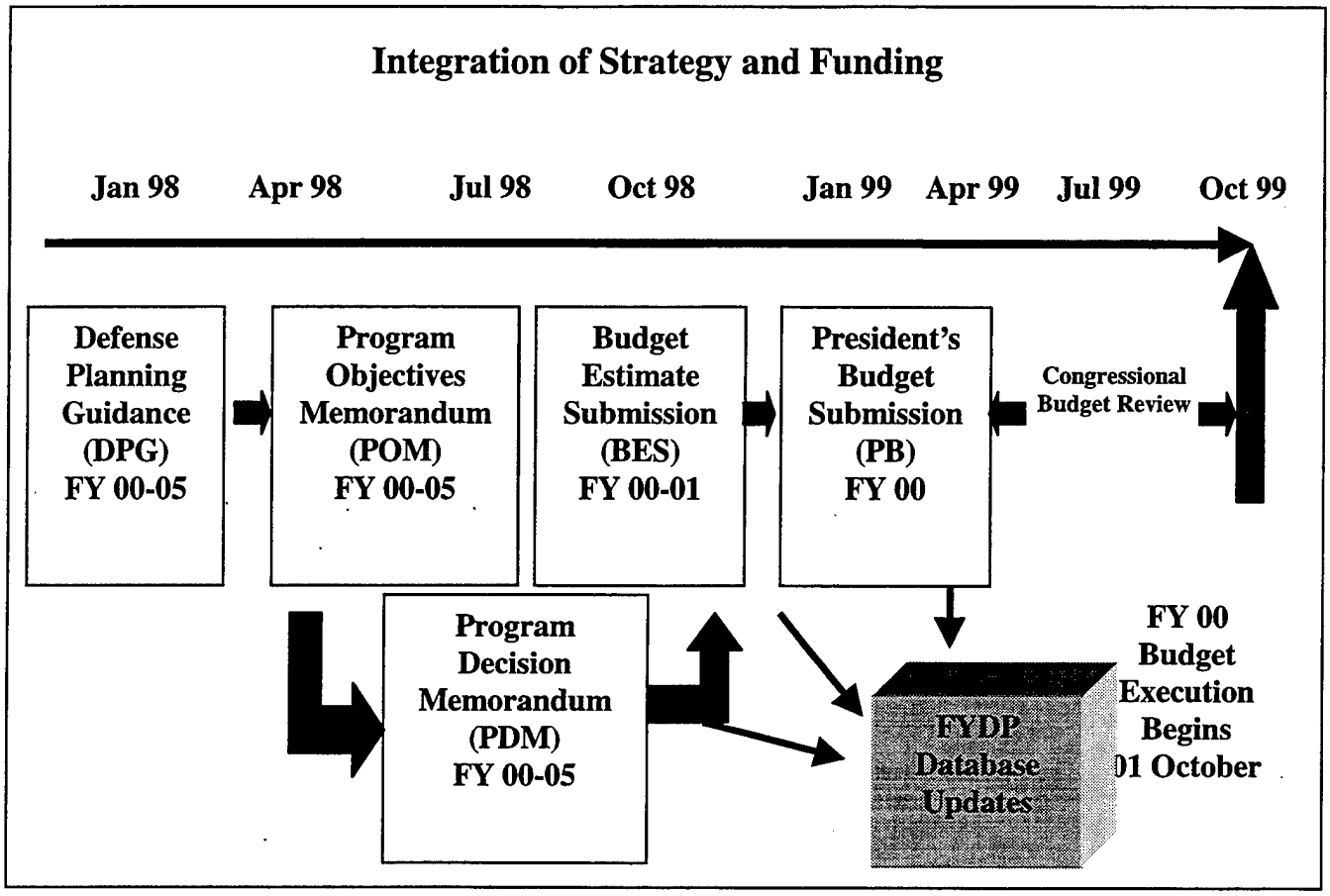

Figure 2.1. Integration of Strategy and Funding

The BES for each service and agency are consolidated at the DoD level. Once DoD has incorporated all requirements, they submit the Defense Budget to the Office of Management and Budget (OMB). OMB then consolidates all Executive Departments and Agencies into the President's Budget and sends it to Congress.

Congress then takes the President's Budget and divides it among the various committees of each house. After careful deliberation by each house, 13 appropriation bills are sent to the President to sign into law. Once the President signs the Defense and Military Construction bills into law, the Director of OMB apportions budget authority by quarter to Secretary of Defense (DoD). The DoD Comptroller apportions this budget

authority to the Secretary of the Navy (DoN). The DoN Comptroller then allocates funding to the Commandant of the Marine Corps (Headquarters Marine Corps (HQMC)). Figure 2.2 demonstrates the funding flow.

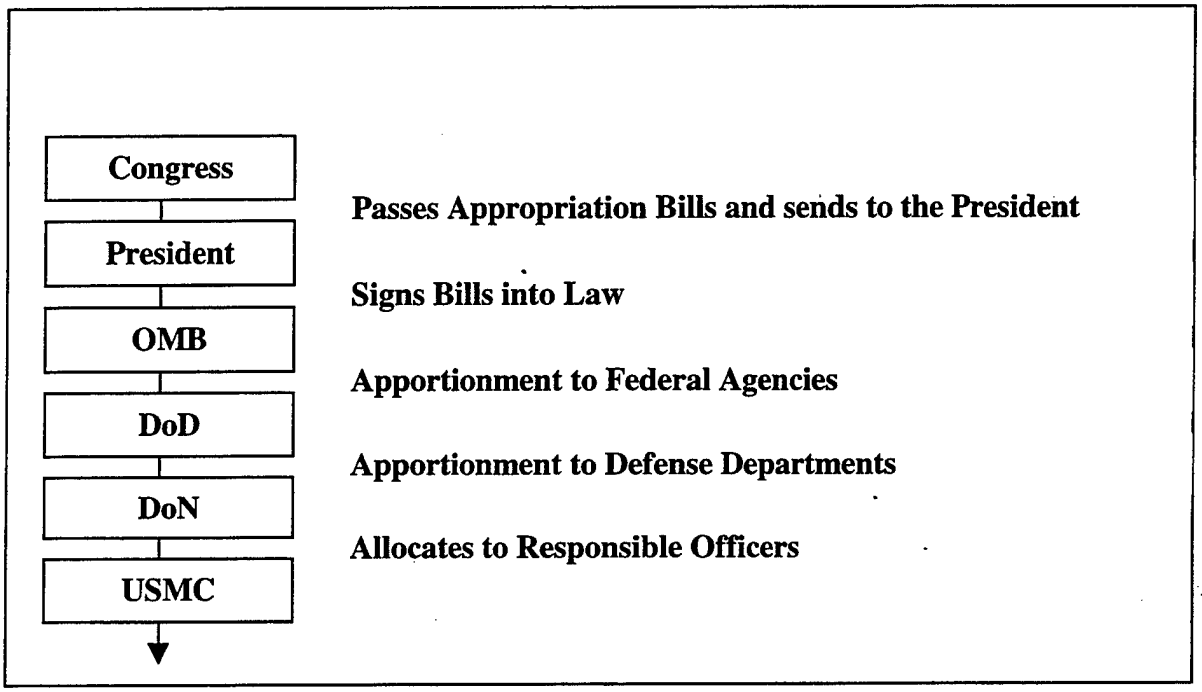

Figure 2.2. Funding Structure

C. FUNDING STRUCTURE

Appropriations authorized by Congress give each Department/Agency within the U.S. Government access to funds contained within the Treasury. The Treasury established a unique two-digit agency code for each Department/Agency. Figure 2.3 lists the two-digit agency codes that make up DoD. To further classify funds appropriated by Congress, the Treasury established appropriations and other fund account symbols by fund group. Figure 2.4 lists the fund group and appropriation [Ref. 4].

2 Digit Agency Codes for DoD

Agency Code	DoD Agency
97	Office of the Secretary of Defense
17	Department of the Navy
21	Department of the Army
57	Department of the Air Force
96	Corps of Engineers, Civil

Figure 2.3. DoD Agency Codes

Appropriation and Other Account Symbols

Fund Group	Appropriation
General Fund	0000-3899
Management and Consolidated Working Funds	3900-3999
Public Enterprise	4000-4499
Intergovernmental	4500-4999
Special Fund	5000-5999
Deposit Fund	6000-6999
Trust Fund	8000-8999

Figure 2.4. Appropriation and Other Account Symbols

D. STANDARD BUDGETING, ACCOUNTING, AND REPORTING SYSTEM (SABRS)

Prior to the implementation of SABRS 3 in October 1999 there were multiple accounting systems within the Marine Corps. The move to consolidate these systems started in the late 1970's. With the introduction of SABRS to selective units in October 1989, the Marine Corps signaled the move to a single accounting system. This initial system only accounted for the Operations and Maintenance (O&M) within the Marine Corps (Appropriations 1106 and 1107). By September 1992, the implementation of SABRS was Marine Corps-wide.

In November 1990, Congress passed the Chief Financial Officers (CFO) Act, which required DoD and other major agencies to improve their financial management and reporting. The CFO Act mandated that each agency develop an integrated accounting system that complies with applicable federal accounting principles and standards.

With momentum from the CFO Act and the Marine Corps-wide implementation of SABRS, the next step was to combine the remaining appropriations into one system. In October 1997 SABRS 2 was fielded, which accounted for the remaining appropriations. The Marine Corps had reduced the number of accounting systems down to two. With the introduction of SABRS 3 the Marine Corps will be the first service to have only one accounting system.

E. AGENCY CODE AND APPROPRIATIONS CONTAINED IN SABRS.

Once received by HQMC the appropriations are loaded into SABRS and further delegated to the appropriate commands. The following appropriations are contained in SABRS [Ref. 5]:

Department Code	Treasury Code	Nomenclature
97	0100	O&M DEFENSE AGENCY
97	0131	REAL PROPERTY MAINTENANCE, DEFENSE
97	0300	PROCUREMENT, DEFENSE GENCIES
97	0350	NATIONAL GUARD & RESERVE EQUIP
97	0400	RDT&E, RES, DEV, TRNG, EVAL DEF AGY
97	0450	RDT&E PENTAGON
97	0500	ECIP, ENERGY CONSERVATION IMPR PGM
97	0510	BASE CLOSURE
17	0703	FAMILY HOUSING MANAGEMENT ACCT, DEF
97	0828	ENVIRONMENTAL ECONOMIC GROWTH
97	0839	QUALITY OF LIFE ENHANCEMENT
97	1084	MILITARY TO MILITARY CONTACT PGM
97	3131	REAL PROPERTY MAINTENANCE, DEFENSE
97	4930	DEFENSE BUSINESS OPERATING FUND (X)
97	4964	DEFENSE EMERGENCY RESPONSE FUND
97	5095	WILDLIFE CONSERV IN MIL, RES, NAVY
97	5188	DISPOSAL OF DOD REAL PROPERTY
97	5189	LEASE OF DOD REAL PROPERTY
97	8242	FOREIGN MILITARY SALES (ADMIN PGM)
17	1105	MILITARY PERSONNEL, MARINE CORPS
17	1106	O&M, MC OPERATIONS AND MAINTENANCE
17	1107	O&M, MC RESERVES
17	1108	RESERVE PERSONNEL, MARINE CORPS
17	1109	PROCUREMENT MARINE CORPS
17	1160	O&M, MC (X) REVOLVING ACCOUNT
17	1319	RDT&E, NAVY
17	1508	PROCUREMENT OF AMMUNITION
17	1804	OFFICIAL REPRESENTATION FUNDS, NAVY
17	8716	GIFT FUND (X)

F. SUMMARY

This chapter provided a general overview of the budget process, funding flow, and appropriations the Marine Corps receives. This provides the cornerstone for building the funding structure in Chapter III. The next chapter will discuss appropriations the Marine Corps receives and what the various appropriations fund.

III. MAJOR APPROPRIATION CATEGORIES

A. INTRODUCTION

Chapter II provided the overview of the budget process, funding flow, and appropriations the Marine Corps receives. This chapter will group the appropriations authorized by Congress into six appropriation categories that consist of Research, Development, Test and Evaluation (RDT&E); Procurement; Military Personnel (MILPERS); Operations and Maintenance (O&M); Military Construction/Family Housing; and Other. The "other" appropriation category will capture the remaining appropriations that do not fit into the other five categories. A breakdown of each appropriation will be demonstrated to provide a structure for tracking TOC in the various procurement programs.

B. BREAKING DOWN THE APPROPRIATIONS

Being able to follow the flow of funding from the Treasury through the DoN and to the United States Marine Corps (USMC) is the first step in tracking TOC. The next step is breaking down the appropriations into Budget Activities (BA). The DoD Financial Management Regulations (FMR) divide each appropriation into a BA structure, which is unique for that appropriation. Figure 3.1 demonstrates further subdivisions for each appropriation that will be discussed in the following sections.

Subdivisions for each Appropriation					
RDT&E	Procurement	MilPer	O&M	MilCon	Other
BA	BA	BA	BA	BA	BA
PE	BLI	BSA	AG	Projects	Projects
Projects	Projects		SAG		

Figure 3.1. Subdivision for each Appropriation

C. RDT&E

There are three appropriations that fund RDT&E for the Marine Corps. Each appropriation contains the same seven BAs, which are consistent throughout DoD. Each BA contains multiple unique Program Elements (PE) and each PE is made up of numerous projects.

1. The three RDT&E appropriations are listed below:

a) 1319 - RDT&E, Navy

Funding specifically designated for RDT&E projects within the DoN.

b) 0400 - RDT&E, Defense Wide

Funding for Joint RDT&E projects.

c) 0450 - Developmental Test and Evaluation, Defense

This funding is provided for Foreign Comparative Testing (FCT). FCT tests and evaluates allied and friendly nations' weapons and equipment in order to avoid costly and time consuming new start acquisition programs.

2. Budget Activities (BA)

The seven BAs are listed below with Research and Development (R&D) Categories in parentheses [Ref. 6].

a) BA 1 - Basic Research (6.1)

Basic research is composed of scientific study and experimentation. Basic research will increase the knowledge and understanding in the physical, engineering, environmental, bio-medical, and behavioral social science fields related to long-term national security needs. It provides fundamental knowledge that may lead to the solution of military problems. It also furnishes part of the base of future applied research and advanced technology developments of new or improved military functional capabilities, such as communications, detection, tracking, surveillance, propulsion, mobility, guidance and control, navigation, energy conversion, materials and structures, and personnel support.

b) BA 2 - Applied Research (6.2)

Applied research includes all efforts directed toward the solution of broadly defined problems, short of a major development program, with a view toward developing and evaluating technical feasibility. This type of effort may vary from fundamental applied research to major subsystem applications and include preliminary development efforts on boundary-layer control air vehicles, turbine engines, high output diesels, inertial guidance components, hull forms, and hardware experimentation that could substantially reduce production costs.

c) BA 3 – Advanced Technology Development (6.3a)

This includes all projects that have been moved into development of generic hardware for tests. The primary result of this effort is a proof of design concept, rather than the development of specific hardware for service use. Advanced development efforts address technological options or uncertainties. Projects in this category have a potential military application although they may or may not be supported by a MNS. The 6.3a programs are categorized by the development of components, subsystems, Advanced Technology Demonstrations (ATDs), or non-material technological demonstrators. The 6.3a programs may have a potential application to a variety of similar generic products, such as diesel engines, rather than for application to one specific, well-defined system such as a missile guidance system or new processor chip.

d) BA 4 - Demonstration and Validation (6.3b)

This includes programs whose funds are now controlled by the PM and aligns with phase I of the acquisition process. This category encompasses the design of items supporting a specific military weapons system development. The development design may still be subject to considerable change and refinement.

e) BA 5 - Engineering and Manufacturing Development (EMD) (6.4)

This includes acquisition phase II programs, in which the item is being engineered for Service use but has not yet been approved for full-rate production.

f) BA 6 - Management Support (6.5)

Management support includes support of installations or operations required for use in general research and development, such as operation and support of test ranges, construction of facilities, and general operation and support of test aircraft and ships. This category of RDT&E is sometimes referred to as the "O&M or overhead" portion of the RDT&E appropriation.

g) BA 7 - Operational System Development (6.6)

This includes R&D efforts directed toward development, engineering, and test of systems already approved for production. A PE for this type of R&D effort would

be linked to a Major Defense Program other than 06, though the work effort would be funded from the RDT&E appropriation.

3. Program Elements (PE)

Program Elements consist of eight digits and there are thousands of PEs that make up the funding structure for DoD. The first seven digits are numeric and the last one is an alpha character. Positions 1 and 2 identify the Major Defense Programs from the Future Years Defense Plan (FYDP 01-11). The next two digits describe the BA funding the PE (the number in parenthesis above designate the number contained in the PE), and the next three are identifiers. The last digit is the component identifier code "M" for Marine Corps, "N" for Navy, etc. [Ref. 7].

4. Project Number

The project number is a five-digit code established by the Department responsible for the PE. The first digit is an alpha character describing the Component; "C" is for Marine Corps. The next four digits represent the Component code for the project. N-91 is responsible for assigning project numbers for the Department of the Navy. There are over a hundred projects numbers that are specific to the Marine Corps.

D. PROCUREMENT

Four appropriations make up the Procurement category for the Marine Corps. The procurement appropriations have no formal BA structure established by DoD, but range

from at least two to many BA. Each BA contains multiple Budget Line Items (BLI), and each BLI is made up of numerous projects.

1. The four procurement appropriations are listed below:

a) 1109 - Procurement, Marine Corps

This appropriation funds procurement projects specific to the Marine Corps.

b) 1508 - Procurement Ammunition, Navy and Marine Corps

This appropriation funds procurement of ammunition specific to the Marine Corps.

c) 0300 - Procurement, Defense

This appropriation funds Defense procurement projects not specific to a military Department.

d) 0350 - Procurement National Guard and Reserve Equipment

This appropriation funds the procurement of Reserve and Nation Guard Equipment.

2. Budget Activity

a) 1109 - Procurement, Marine Corps [Ref. 8]

There are seven BAs contained in this appropriation. In FY 1996 BA-1 moved to Appropriation 1508 as part of a consolidation effort within the DoN. The seven are as follows: BA-1 Ammunition, BA-2 Weapons and Combat Vehicles, BA-3 Guided

Missiles and Equipment, BA-4 Communications and Electronics, BA-5 Support Vehicles, BA-6 Engineer and Other Equipment, BA-7 Spares and Repair Parts.

b) 1508 - Procurement Ammunition, Navy and Marine Corps

There are two BAs in this appropriation. BA-1 is Procurement of Ammunition, Navy and BA-2 is Procurement of Ammunitions, Marine Corps. Prior to FY 1996, the Procurement of Ammunition, Marine Corps was contained in Appropriation 1109 under BA-1.

c) 0300 - Procurement, Defense

There are three BAs in this appropriation. BA-1 is for Major Equipment, BA-2 is for Special Operations Command, and BA-3 is for Chemical Biological Defense.

d) 0350 - Procurement National Guard and Reserve Equipment

There are two BAs in this appropriation. BA-1 is for Reserve Equipment and BA-2 is for National Guard Equipment.

3. Budget Line Items (BLI)

BLIs are six numeric characters. The first digit of the BLI identifies the BA they are in (The first digit for all BA-2, Weapons and Combat Vehicles starts with the number two). The next five digits are procurement identifiers. The BLI are established at the DoD level, and there are several hundred BLIs that make up the budget for the Marine Corps.

4. Procurement Project Numbers

Procurement Project Numbers are characters assigned by the MARCORSYSCOM for the Marine Corps. The first character is the letter "P", which represents procurement, with the remaining six numeric characters. The third character represents the BA for that appropriation. The last four characters represent the Component code for the project. The second digit was added in FY 1992 to prevent duplication of Component codes. There are more than a thousand procurement project numbers in the Marine Corps.

E. MILITARY PERSONNEL

There are two appropriations that make up the Military Personnel appropriations for the Marine Corps. There is a separate and distinct BA/Budget Sub-Activity (BSA) structure for active and reserve forces, but active and reserve BA/BSA structures are consistent throughout DoD.

1. Military Personnel appropriations:

a) 1105 – Military Personnel Marine Corps

This appropriation finances the personnel costs of the active duty forces of the Marine Corps. Changes in financial requirements are primarily related to military personnel strengths. In addition, this appropriation finances the future retirement benefits of the current active forces. While many of the entitlements financed by this appropriation are set by statute, the estimates reflect continuing efforts to improve management, including implementation of audit recommendations, improved

management of military travel, and prudent use of bonus programs and other pay programs [Ref. 9].

b) 1108 – Military Personnel, Marine Corps Reserve

This appropriation finances the personnel cost of the Marine Corps Reserve, including future retirement benefits of current Reserve forces. The estimates reflect continuing efforts to improve management efficiency including, for example, more economical use of training and recruiting resources as well as the undertaking of active missions at lower costs [Ref. 10].

2. Budget Activity

a) 1105 - Military Personnel, Marine Corps

There are six BAs that make up the funding structure for all Military Personnel appropriations in DoD. The Marine Corps uses the following BAs: BA-1 is for Pay and Allowances for Officers, BA-2 is for Pay and Allowances for Enlisted Personnel, BA-4 is for Subsistence of Enlisted Personnel, BA-5 is for Permanent Change of Station Travel, and BA-6 is for Other Military Personnel Costs. BA-3, Pay and Allowances of Cadets and Midshipmen is not applicable to the Marine Corps, because the DoN funds this BA within its budget [Ref. 11].

b) 1108 - Military Personnel, Marine Corps Reserve

There are two BAs that make up the funding structure for all Reserve Military Personnel appropriations in DoD. BA-1 is for Unit Individual Training and BA-2 is for Other Training and Support.

3. Budget Sub Activity (BSA)

a) 1105 - Military Personnel, Marine Corps (MPMC)

The BSA is a single alpha character that further subdivides the BA. There are 45 BSAs that make up the MPMC appropriation. These are listed in Appendix A.

b) 1108 - Military Personnel, Marine Corps Reserve (MPMCR)

The BSA is a single alpha character that further subdivides the BA. There are 11 BSAs that make up the MPMCR appropriation. These are also listed in Appendix A.

F. OPERATIONS AND MAINTENANCE

There are four appropriations that make up the Operations and Maintenance for the Marine Corps. Each appropriation contains the same four BAs, which are consistent throughout DoD. Each BA contains multiple Activity Groups (AG) and each AG is made up of numerous Sub-Activity Groups (SAG).

1. The four Operations and Maintenance appropriations are listed below:

a) 1106 - Operations and Maintenance, Marine Corps

This appropriation finances the O&M for the active duty forces of the Marine Corps.

b) 1107 - Operations and Maintenance, Marine Corps Reserve

This appropriation finances the O&M for the Marine Corps Reserve.

c) 1160 – Operations and Maintenance, Marine Corps Revolving Account.

This is a nonappropriated account and exists only for accounting purposes. No further analysis will be done on this appropriation.

d) 0100 - Operations and Maintenance, Defense Agencies

This appropriation finances the O&M for Commanders in Chief (CINC) and JCS directed exercises.

2. Budget Activity

There are four BAs that make up the funding structure for all O&M appropriations in DoD. The Marine Corps uses the following BAs: BA-1 is for Operating Forces, BA-3 is for Training and Recruiting, BA-4 is for Administration and Servicewide Support.

BA-2, Mobility Operations is not applicable to the Marine Corps. The Reserve Operations and Maintenance consist of only BA-1 and BA-4.

3. Activity Group

The AG further separates funding contained within a BA, and each service is given latitude on how they are constructed. The BA may contain one or several AGs, and these are consistent in both Operations and Maintenance Marine Corps appropriations.

4. Sub Activity Group (SAG)

SAG further separates funding contained within an AG. Each AG contains at least one SAG, but may consist of as many as twenty-seven. The Operations and Maintenance for both Marine Corps appropriations contain a majority of the same SAGs, but there are three that are unique to that appropriation. The Operations and Maintenance, Defense is unique and is not comparable to the other two appropriations.

G. MILITARY CONSTRUCTION/FAMILY HOUSING

There are five appropriations that fund the Military Construction/Family Housing for the Marine Corps.

0703 - Family Housing, Navy and Marine Corps

1205 - Military Construction, Navy

1235 - Military Construction, Naval Reserve

0500 - Military Construction, Defense-Wide

0510 - BRAC

H. OTHER APPROPRIATIONS

There are eleven appropriations that make up the other appropriations category for the Marine Corps.

0828 - Environmental Economic Growth

0839 - Quality of Life Enhancement, Defense Real Property Maintenance

1084 - Military to Military Contact Program

1804 - Official Representation Funds, Navy

3131 - Real Property Maintenance, Defense

4930 - Defense Business Operating Fund

4964 - Defense Emergency Response Fund

5059 - Wildlife Conservation in Military Reservation, Navy

5188 - Disposal of DoD Real Property

5189 - Lease of DoD Real Property

8242 - Foreign Military Sales

I. SUMMARY

This chapter organized the appropriations into six categories and broke down the appropriations to provide a structure for tracking TOC through the various procurement programs. The next chapter will examine the various procurement programs and track them through the appropriation categories identified in this chapter.

IV. TRACKING TOC IN THE MAJOR APPROPRIATIONS

A. INTRODUCTION

The ability to capture costs of procurement programs starts with understanding the flow of the appropriation from Congress to the service that executes the funding. Chapter II provides a logical flow and provides the mechanisms for tracking the appropriations. Chapter III groups the appropriations into six major appropriation categories and explains how each is subdivided. This chapter incorporates the processes and data described in the previous two chapters for tracking TOC for the various procurement programs by appropriation.

The ability to track costs in each of the major appropriation categories starts with focusing on the various procurement programs, because they are the common link. Once a procurement program has been identified, the next step is to examine each of the major appropriation categories separately to determine how to capture TOC for that appropriation. The tracking of each major appropriation category will begin with the appropriation that is allocated to the Marine Corps.

B. RDT&E

RDT&E is comprised of seven BA categories and, depending on the FY, contains as few as twenty to more than thirty program elements. Contained within these program elements are forty to seventy RDT&E project numbers that may contain one or several procurement programs. Complicating the process even more is that a program may start,

be expedited, merged, separated, slowed, or terminated at various points within the RDT&E process for many different reasons. This makes extracting costs for the various procurement programs difficult, because programs are not allowed to maintain their single identity throughout the evolutionary RDT&E process.

The first step in establishing TOC for the various procurement programs would be to break out the cost for each specific program by RDT&E appropriation. The next step would be to determine those costs that could not be associated with a specific program. These latter costs would fall into two distinct categories, those that can be attributed to two or more specific programs and those that are attributed to all programs. To establish the costs associated with these programs the Marine Corps has adopted an Activity-Based Cost (ABC) structure to allocate these costs.

To start the analysis we must examine each appropriation one at time. The first two appropriations, RDT&E Defense (0400) and Foreign Comparative Testing (0450) fall under the first step. That is, costs can be tracked by specific procurement program. For RDT&E Navy (1319) we need to perform the two step process of attributing costs to a specific procurement program and allocating costs over several or all procurement programs. Appendix B gives a complete listing of each RDT&E appropriation, broken out by Project Number and Current Project Element. Appendix C extracts the Mission Description and Budget Item Justification submitted to Congress for several RDT&E Navy Project Numbers. These examples are useful in explaining the complicated process of extracting cost data for a single procurement program when the data may be contained in several project numbers.

C. PROCUREMENT

These appropriations procure items necessary for the Marine Corps to perform its mission within the NMS. Procurement items are the result of extensive RDT&E efforts and are continually assessed and modified to meet current and future challenges. The ability to track a procurement program starts with the assignment of a procurement project number. As discussed in Chapter III, each procurement program has a unique seven digit project number.

By understanding how procurement project numbers are constructed, we are able to capture costs for a procurement program over time. Appendix B provides a complete list of project numbers for each appropriation. One cost that may not be captured by the project number would be the First Destination Transportation (FDT) charge. This is the cost that may or may not be included within the procurement contract. If not included within the procurement contract, the cost for FDT would be captured under a specific project number in the same procurement appropriation. The cost of FDT is less than one percent of the total procurement dollars provided to the Marine Corps.

D. MILITARY PERSONNEL

These appropriations fund the personnel necessary for the Marine Corps to perform its mission within the NMS. The active duty and reserve force structure for each service is established by Congress. Services continuously perform systematic reviews of their Table of Organization (T/O) and Table of Equipment (T/E) to ensure a proper mix of personnel and equipment are present to meet mission requirements. The ability to

track a procurement program within these appropriations is limited at this time, because the Marine Corps uses allocation accounting in these appropriations. Allocation accounting is used because the personnel resources and funding necessary to capture individual costs are significant.

When Congress authorizes appropriation for military personnel, it appropriates by the structure provided in Appendix A and discussed in the previous chapter. Using the structure in Appendix A, funds are obligated for each BSA prior to actual expenses being incurred. Then as the FY progresses and the Treasury makes payments for the specific BSA, the liquidations are posted against the obligation of a single line of appropriation. This prevents tracking the costs for individuals or groups. Thus, personnel costs can only be allocated to programs at average rates. However, some analysis can be conducted.

The first step in tracking TOC for the Military Personnel appropriations is to break down the force structure to the Military Occupational Skill (MOS) level. This four-digit number represents specific skills the Marine Corps must have under the current force structure. Appendix B lists the appropriations for Military Personnel, Marine Corps (1106) and Military Personnel, Marine Corps Reserve (1107). Appendix D provides a breakout per Military Occupational Skill (MOS) for both enlisted and officer with manpower totals for both OMMC and OMMCR for FY 1994 - 1998. Based on total dollars in Appendix B and manpower totals in Appendix D we can estimate manpower cost.

E. OPERATION AND MAINTENANCE

O&M is the most complicated of the appropriations to track, because O&M provides the funding to support the day-to-day activities of the Marine Corps. The ability to track TOC for a procurement program within these appropriations starts by examining the appropriations, as described in Chapter III. The three appropriations (1160 omitted) contained within this category have the same four BAs. Since BA-Two is not applicable to the Marine Corps, only the three remaining BAs are relevant. After examining BAs Three and Four, it can be determined that these do not contribute directly to a specific procurement program and must be allocated. This leaves only BA-One, and to examine this BA we need to separate the Defense Agencies' appropriation from the OMMC and OMMCR appropriations. The reason for this is that we need to break down the appropriations further and the Defense Agency appropriation is not consistent with the other two appropriations.

1. Defense Agencies (0100)

Funding for this appropriation consists of CINC sponsored JCS training exercises, Family Advocacy Program (FAP), Relocation Assistance Program (RAP), Transition Assistance Program (TAP), and Combating Terrorism. The costs associated with these programs are not attributable to a specific procurement program. Further analysis would need to be conducted to determine if these costs should be allocated to the various procurement programs.

2. OMMC (1106) and OMMCR (1107)

To examine both the OMMC and OMMCR appropriations we need to breakdown the appropriations to the AG/SAG level. In the OMMC appropriation there are two AGs, 1A and 1B. In the OMMCR appropriation there is only one AG, 1A.

AG 1B contains costs for all prepositioning equipment in the Marine Corps. All costs associated with this program can be attributed directly to a specific procurement program.

AG 1A is contained in both OMMC and OMMCR. There are six SAGs that make up this AG and each appropriation contains five SAGs, with four SAGs being the same in both appropriations. SAGs 4A, 5A and 8A can not be attributed to a specific procurement program and thus should be allocated. SAGs 2A, and 3A can be attributed to a specific procurement program. This leave SAG 1A, which is a hybrid and has portions that can be specifically attributed to a procurement program and portions that need to be allocated.

F. SUMMARY

This chapter incorporates the structure gained in the two previous chapters and gives us the ability to track TOC for the various procurement programs by appropriation. The next chapter analyzes the process of tracking TOC in the major appropriation and presents the findings.

V. DATA PRESENTATION AND ANALYSIS

A. INTRODUCTION

This chapter will take a look at the total funding authorized to the Marine Corps and evaluate the ability to track TOC for the Marine Corps procurement programs. Thus far, this thesis has discussed the budget process, funding flow and appropriations along with major appropriation categories and tracking TOC in the major appropriations. This chapter will complete the investigation by evaluating current accounting methods in the Marine Corps.

B. MARINE CORPS FUNDING

The first part of the analysis was to establish fiscal parameters. By establishing the total appropriation authorized to the Marine Corps, one can then gain a better understanding of the funding structure necessary to support the Marine Corps. Over the last three fiscal years, the Marine Corps received between $10.5 to 11.3 billion per FY. Table 5.1 presents the amount of funding in the six major appropriation categories as of 15 October 1999 [Refs. 13 & 14].

Table 5.1. Marine Corps Funding by Major Appropriation Categories

Appropriation Categories	FY97	FY98	FY99	Average	Average Percentage
RDT&E	312,186	312866	395604	340,219	3.14%
Procurement	741,313	692,454	1,116,768	850,178	7.85%
MILPER	6,369,067	6,416,141	6,622,775	6,469,328	59.71%
O&M	2,491,981	2,586,608	2,682,710	2,587,100	23.88%
MILCON	372,769	376,890	336,330	361,996	3.34%
Other	203,836	334,405	137,795	225,345	2.08%
Total	10,491,152	10,719,364	11,291,982	10,834,166	100.00%

To further frame the major appropriation categories, a FY Average and Percentage was computed. These numbers provided a starting point to focus the time available for analysis on the most important areas. Figure 5.1 depicts the FY percentage of each of the major appropriation categories for the Marine Corps.

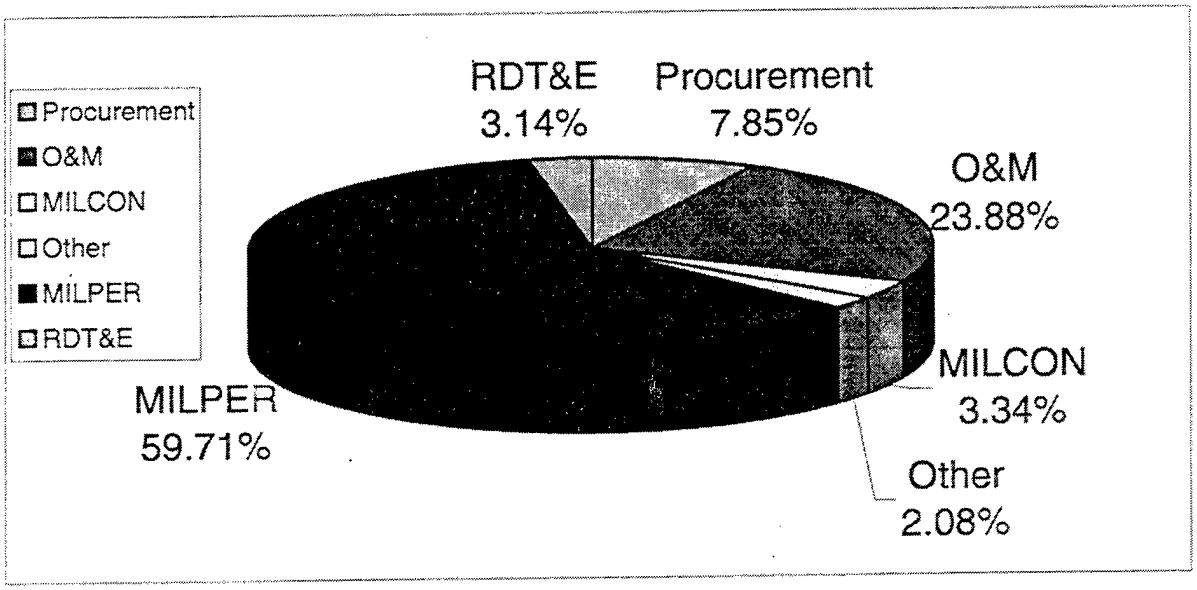

Figure 5.1. Marine Corps Major Appropriation Categories Percentages

C. MAJOR APPROPRIATION CATEGORIES

The approach used in tracking TOC for all the appropriations was two-fold. First, data was gathered from the Budget Estimates submitted to Congress for each appropriation. Contained in the Budget Estimates submitted to Congress was prior year historical data and justifications of how to the funding was executed. The next step was to gather historical data from the Marine Corps accounting system. The Budget Estimates tell the story of what happened to the appropriations, with the accounting data providing an accurate funding record. This two-fold method provided a more accurate picture than would be provided by only one set of data.

The first part of this chapter examined the total appropriations available to the Marine Corps. This part of the analysis examines four of the six major appropriation categories. Each major appropriation examined will look at the total funding received for the major appropriation over the last several years, and the ability to track the funding received.

1. RDT&E

Even though RDT&E only makes up 3 percent of the total funding received by the Marine Corps, this appropriation makes up a significant portion of the direct costs associated with most procurement programs. The three appropriations that make up this category are RDT&E, Defense Wide (0400); Developmental Test and Evaluation, Defense (0450); and RDT&E, Navy (1319).

Table 5.2 allows us to see the RDT&E funding received by the Marine Corps over the last seven years, and Table 5.3 allows us to see the percentages for each of the RDT&E appropriations. In examining these tables one can see a steady rise in RDT&E funding over the last few years. This increase is due to two commitments from DoD. The 1319 appropriation is for modernization of equipment and the 0400 appropriation is to improve the Joint Service environment of each branch [Refs. 15-46].

Table 5.2. RDT&E Funding Received by the Marine Corps per FY

Appropriation	FY93	FY94	FY95	FY96	FY97	FY98	FY99
0400	10,797	44,243	38,481	35,426	36,873	44,938	34,460
0450	0	0	0	0	1,047	896	3,112
1319	220,039	212,846	197,735	218,327	274,266	267,032	358,032
Total	230,836	257,089	236,216	253,753	312,186	312,866	395,604

Table 5.3. RDT&E Appropriation Percentages per FY

Appropriation	FY93	FY94	FY95	FY96	FY97	FY98	FY99
0400	4.69	17.21	16.29	13.96	11.81	14.36	8.71
0450	0.00	0.00	0.00	0.00	0.34	0.29	0.79
1319	95.31	82.78	83.71	86.04	87.85	85.35	90.50
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Understanding that RDT&E is an evolutionary process was crucial in tracking procurement projects during the RDT&E life cycle. The first step in analyzing this appropriation was to build a database to capture the cost for each RDT&E project number by FY. By building the database one is able to logically follow the RDT&E funding costs in a specific RDT&E project number. The database also allowed the tracking of procurement program funding that an RDT&E project number was evaluating and of the initial O&M funding authorized for the procurement program.

Appendix C contains eleven RDT&E project numbers from the database. Dollar figures contained in Appendix C may differ from the official accounting records contained in Appendix B, because RDT&E and Procurement are multi-year appropriations and final payments may not have been made at the time of BES to Congress.

To present the data from the project numbers in a more manageable format, Appendix B contains a spreadsheet of all RDT&E project numbers starting in FY 1988 and continuing to FY 1999. The database also allows us to understand that there are several types of RDT&E project numbers. First, there are project numbers that contain one or more procurement programs (C2270). The cost of these project numbers can be attributed directly to the procurement program. Second, there are project numbers that perform a task, such as operational testing and evaluation or advanced technology demonstrations (C0031 and C0033). The cost of these programs can be attributed directly to the procurement program. The third type of project number is for a task that performs analysis and studies that may or may not be directly attributed to a procurement program (C3001).

The first and second types of RDT&E project numbers allow costs to be directly attributed to a procurement program. The third type of project number will need to be evaluated to see if any of the costs may be attributed to a specific procurement program.

2. PROCUREMENT

With the focus of this thesis on the ability to track TOC for the Marine Corps procurement programs, the procurement appropriation is the keystone of the analysis. The procurement appropriations make up almost 8 percent of the appropriations spent by the Marine Corps over the last three years, and all costs can be directly associated with a specific procurement program. The four appropriations that make up this category are Procurement, Defense (0350); Procurement National Guard and Reserve Equipment (0350); Procurement, Marine Corps (1109); and Procurement Ammunition, Navy and Marine Corps (1508).

Table 5.4 presents the Procurement funding received by the Marine Corps over the last eight years, and Table 5.5 shows the percentages for each of the Procurement appropriations. In examining these tables one needs to understand that Desert Storm/Shield occurred during FY 92, so the data from that year and the next couple of years is affected. Focusing on FY 95 and beyond reveals that DoD is consistent with its policy of modernization and providing a Joint Service environment. The 1109 and 0300 appropriations show significant increases since Desert Storm. The 1508 appropriation has remained relatively stable and that would be anticipated in the current environment. The 0350 appropriation varies the most and can be attributed to the Joint Service environment established by DoD [Refs. 47-79].

Table 5.4. Procurement Funding Received by the Marine Corps per FY

Appropriation	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
0300	0	0	0	5,256	13,980	80,774	57,873	95,139
0350	19,800	7,900	30,852	11,782	38,565	25,917	71,480	2,000
1109	397,536	573,619	307,666	331,848	350,592	502,858	440,819	856,800
1508	283,159	179,590	46,623	132,994	175,127	131,764	122,282	162,829
Total	700,495	761,109	385,141	481,880	578,264	741,313	692,454	1,116,768

Table 5.5. Procurement Appropriation Percentages per FY

Appropriation	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
0300	0.00	0.00	0.00	1.09	2.42	10.90	8.36	8.52
0350	2.83	1.04	8.01	2.45	6.67	3.50	10.32	0.18
1109	56.75	75.37	79.88	68.87	60.63	67.83	63.66	76.72
1508	40.42	23.60	12.11	27.60	30.28	17.77	17.66	14.58
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

The first step in analyzing this appropriation was to build a procurement project number database to capture the cost for each procurement project number by FY. This proved more difficult that anticipated, because there was no correlation between the BLI and procurement project number. Until MARCORSYSCOM provided a majority of the information that enabled the two data sets to be linked, there was no way to conduct the analysis with any certainty. There are still some fields that remain blank due to the unavailability of data.

By building a database one was able to logically follow the procurement funding costs in a specific procurement project number by FY. The next step was to link the Budget Line Items with the procurement project number. Once this was established, the next task was to link an RDT&E project number that was evaluating the procurement

program. Being able to identify these three elements for a specific procurement program enables an audit trail in tracking TOC.

Table 5.6 provides an example of the format for cross-referencing the data contained within the database with other appropriations. This database also provided the ability to track initial O&M funding authorized for the procurement program. Appendix C contains eleven RDT&E project numbers from the database. Dollar figures contained in Appendix C may differ from numbers in official accounting records contained in Appendix B, but the BES numbers are less than one half of one percent of the actual dollar amount. The differences for the BES and official accounting records are due to multi-year appropriations and final payments that are not completed at the time of BES submission to Congress.

Table 5.6. Excerpt from Procurement Project Number Database contained in Appendix B

Budget Line Item	Procurement Project Number	RDT&E Project Number	Nomenclature	Funding Per FY
203800	P023781	C1555	Light Armored Vehicle (LAV) PIP	$$$
301100	P038061	C1964	JAVELIN	$$$
308900	P038022	C2113	Predator (SRAW)	$$$
509300	P057012	C0201	Logistics Vehicle System Replacement (LVSR)	$$$

3. MILITARY PERSONNEL

The Military Personnel appropriations make up about 60 percent of the appropriations spent by the Marine Corps over the last three years. The two

appropriations that make up this category are Military Personnel, Marine Corps (1105) and Military Personnel, Marine Corps Reserve (1108).

Table 5.7 contains the Military Personnel funding received by the Marine Corps over the last decade and Table 5.8 includes the percentages for each of the Military Personnel appropriations. With manning levels being established by Congress, these appropriations have remained constant, with the exception of FY 91 and FY 92, which reflect Desert Storm/Shield. The increases in these appropriations are due to pay increases passed by Congress [Refs. 80-101].

Table 5.7. Military Personnel Funding Received by the Marine Corps per FY

Appn	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
1105	5,798,830	6,374,780	6,102,580	5,904,197	5,732,414	5,762,211	5,724,039	5,976,088	6,026,276	6,216,159
1108	314,383	285,684	345,005	340,256	344,082	351,824	384,642	392,979	389,865	406,616
Total	6,113,213	6,660,464	6,447,585	6,244,453	6,076,496	6,114,035	6,108,681	6,369,067	6,416,141	6,622,775

Table 5.8. Military Personnel Appropriation Percentages per FY

Appn	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
1105	94.86	95.71	94.65	94.55	94.34	94.25	93.70	93.83	93.92	93.86
1108	5.14	4.29	5.35	5.45	5.66	5.75	6.30	6.17	6.08	6.14
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

The analysis of this appropriation is very basic and has to deal with the question, "How can personnel costs be attributed to the Marine Corps procurement programs?" In examining the many Military Occupational Skills (MOS) that make up the Marine Corps, one needs to determine the MOSs that contribute directly to a procurement program (Tanks, Artillery, 5-ton, etc.) and those MOSs that have an indirect contribution to a procurement program (Lawyers, Administration, Finance, etc.). Appendix D contains a detailed breakdown of each MOS for FY 94 through FY 98.

After determining how may people are in each MOS and which MOS is attributable to the various procurement programs, there are several ways to determine Military Personnel costs that would be applicable to TOC for the procurement programs. One example would be to use the Defense Finance and Accounting Service (DFAS) composite standard pay & reimbursement rates. Reimbursement rates include retirement and other fringe benefits. These tables are based on pay grade and give an hourly rate, daily rate, monthly rate, and annual rate. Table 5.9 reports the rates for FY 99, effective 1 October 1998. Further research will need to be done to determine the most beneficial method for the Marine Corps.

Table 5.9. FY 99 Military Composite Standard Pay & Reimbursement Rates

Pay Grade	Hourly Rate	Daily Rate	Monthly Rate	Annual Rate
O-10	79.18	633.45	13,725.00	164,698.00
O-9	77.36	618.84	13,408.00	160,899.00
O-8	70.40	563.20	12,203.00	146,431.00
O-7	65.91	527.29	11,425.00	137,095.00
O-6	58.34	466.70	10,112.00	121,341.00
O-5	50.70	405.60	8,788.00	105,456.00
O-4	42.05	336.40	7,289.00	87,463.00
O-3	35.19	281.52	6,100.00	73,195.00
O-2	28.27	226.17	4,900.00	58,803.00
O-1	21.83	174.61	3,783.00	45,398.00
CWO-5	43.20	345.57	7,487.00	89,849.00
CWO-4	38.06	304.49	6,597.00	79,168.00
CWO-3	31.99	255.92	5,545.00	66,538.00
CWO-2	27.79	222.32	4,817.00	57,802.00
WO-1	25.53	204.27	4,426.00	53,109.00
E-9	34.32	274.55	5,949.00	71,384.00
E-8	28.71	229.67	4,976.00	59,714.00
E-7	24.81	198.46	4,300.00	51,600.00
E-6	21.44	171.52	3,716.00	44,594.00
E-5	17.49	139.94	3,032.00	36,385.00
E-4	14.51	116.09	2,515.00	30,184.00
E-3	12.40	99.18	2,149.00	25,786.00
E-2	11.26	90.11	1,952.00	23,428.00
E-1	9.91	79.28	1,718.00	20,612.00

4. OPERATION AND MAINTENANCE

The O&M appropriations make up approximately 24 percent of the funding received by the Marine Corps, but can contribute up to 60 percent of the LCC for a procurement program. The three appropriations that make up this category are Operation and Maintenance, Defense Agencies (0100); Operation and Maintenance, Marine Corps (1106); Operation and Maintenance, Marine Corps Reserve (1107).

Table 5.10 presents the O&M funding received by the Marine Corps over the last decade and Table 5.11 contains the percentages for each of the O&M appropriation per FY. Eliminating FY 91 and FY 92 due to Desert Storm/Shield. Examining the 1106 and 1107 appropriations reveals steady growth for the last several years. The 0100 shows new growth due to quality of life enhancement established by DoD [Refs. 102-123].

Table 5.10. O&M Funding Received by the Marine Corps per FY

Appn	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
0100	0	0	0	0	0	31,028	20,901	30,615	33,996	29,029
1106	1,850,507	3,225,182	2,146,464	1,968,766	1,902,489	1,876,885	2,489,287	2,351,654	2,436,163	2,533,688
1107	78,382	71,193	94,133	79,615	91,244	85,000	102,517	109,712	116,449	114,493
Total	1,928,889	3,296,375	2,240,597	2,048,381	1,993,733	1,992,913	2,612,705	2,491,981	2,586,608	2,682,710

Table 5.11. O&M Appropriation Percentages per FY

Appn	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
0100	0.00	0.00	0.00	0.00	0.00	1.56	0.80	1.23	1.31	1.08
1106	95.94	97.84	95.80	96.11	95.42	94.18	95.28	94.37	94.18	94.45
1107	4.06	2.16	4.20	3.89	4.58	4.27	3.92	4.40	4.50	4.27
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

In analyzing the O&M appropriations the focus was to determine how much was spent on each procurement program. Since the Defense Agencies appropriation (0100) provides only indirect funding for the procurement programs, the focus moved to OMMC and OMMCR. The previous chapter examined these appropriations and determined that SAGs 1A, 2A, 3A, 1B and 2B are the only areas that contain direct cost that may be attributed directly to the procurement programs.

The accounting system does not go into enough detail to collect this type of data, but the Maintenance system does. To distinguish which costs can be directly attributed to a procurement program, Marine Corps Logistics Base Albany, Georgia had to write a program to extract all maintenance information from Marine Corps Integrated Maintenance Management System (MIMMS). Table 5.12 presents the total dollar amount (in thousands) for Marine Corps maintenance costs for FY 92 through FY 98. Data for FY 99 was received but not included in this analysis, because the Marine Corps is replacing MIMMS with the ATLASS II+ system at specific commands.

Table 5.12. Total Maintenance Cost for the Marine Corps per FY

	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98
Maintenance	183,331	189,818	255,209	207,319	212,198	227,531	234,303

Table 5.13 contains an excerpt of the data extracted from MIMMS. This report provided a complete listing of each TAMCN, NSN, Quantity, Unit Price, Extended Price and total cost per TAMCN. Due to each FY consisting of over 1,000 pages, they are not included in this thesis.

Table 5.13. Excerpt of the data extracted from MIMMS

DATE 991105 REPORT FOR YEAR 1997
PAGE 893

TAMCN	NSN	QTY	UNIT PRICE	PRICE ENTENDED
..				
..				
D1059	5340004059781	3	5.58	16.74
D1059	5340004075090	1	33.29	33.29
..				
..				
..				
D1059	5340010260468	1	2.19	2.19
D1059	5340010263251	2	2.21	4.42
D1059	5340010387759	87	7.32	534.34
D1059	5340010488668	18	1.06	19.20
D1059	5340010507059	200	27.39	5053.66
D1059	5340010590114	107	2.93	273.52
..				
..				
..				
D1059	9905012269437	7	13.44	94.08
D1059	9920002929946	1	0.32	.32
TAMCN TOTAL				6,273,906.99

D. FINDINGS

1. RDT&E

The RDTE was very well constructed and logical to follow once one discovered that RDT&E is an evolutionary process. Tracking costs over time within these appropriations was cumbersome, because of Congressional, DoD, and DoN restructuring of the Program Elements. The Budget Estimates Submissions to Congress provided the descriptive continuity that, when combined with the accounting record, makes it possible to track TOC. Further analysis of the individual appropriations reveals the following:

a) RDT&E Navy (1319)

The project number established by the program element is the same as the project number in the accounting system. This makes tracking costs within this appropriation a manageable process.

b) RDT&E Defense (0400) and Foreign Comparative Testing (0450)

The project number established by the program element is different than the project number in the accounting system. This makes tracking costs for this appropriation difficult.

2. PROCUREMENT

The major problem with the procurement appropriations occurs when MARCORSYSCOM assigns a procurement project number. Currently, there is no correlation between BLI and the procurement project number. If there was a correlation (For example, first four characters of the BLI are characters two through five for the Procurement Project Number) between the BLI and the procurement project number, anyone who knew the BLI, would also know what was being procured. This structure would allow personnel in other Marine Corps and DoD commands to logically follow the procurement programs.

Another area of concern is the FDT. Currently there is no simple way to capture the cost for a specific procurement program. The costs are cumulative and the research is

manpower intensive to break out these costs. A new system called "Power Track" is currently being installed Marine Corps-wide to alleviate this situation.

3. MILITARY PERSONNEL

Even though the Marine Corps uses allocation accounting for its personnel accounts, this does not prevent TOC from being implemented for this appropriation. Using the DFAS military composite standard pay and reimbursement rates for the various MOSs would allow cost estimates to be established for the procurement programs. This will suffice until an accounting system becomes available that will allow for individual accounting of personnel.

4. OPERATIONS AND MAINTENANCE

The O&M was the most difficult of all the major appropriations to determine what costs can be attributed to a procurement program. The RDT&E and Procurement appropriations are used by MARCORSYSCOM. The Military Personnel appropriations are only used at the HQMC level. The O&M is used by every major command in the Marine Corps. With this wide distribution of this appropriation, the ability to extract costs associated with a specific procurement program is very limited.

To further compound the matter, the accounting system is not designed to account for this level of detail and personnel restrictions prevent modifying the system to accommodate this detail. The solution is to rely on other systems such as MIMMS and ATLASS II+ to collect this detailed data.

E. SUMMARY

This chapter provided the percentage each major appropriation category provided to the overall funding the Marine Corps receives. This chapter also analyzed RDT&E, Procurement, Military Personnel, and O&M to provide examples of how to capture TOC for the Marine Corps Procurement Programs. The next chapter will present the thesis summary, conclusion and recommendations.

VI. SUMMARY, CONCLUSION AND RECOMMENDATIONS

A. SUMMARY

In the past, military procurement was concerned with performance. The O&M, Personnel, and other costs were not considered at the time of procurement and therefore did not enter into the decision making process. With a shrinking defense budget, DoD put greater emphasis on understanding TOC when procuring new items. The days of procuring items based solely on performance were replaced with the introduction of CAIV. Program managers must now weigh the factors of performance, cost, and schedule when evaluating new programs. A major objective for conducting this research was to gain a better understanding of what can be done to assist program managers in TOC decisions.

Chapter I defines TOC and provides the background for the thesis. This chapter also describes the scope of the thesis along with its limitations, and provides the research questions to be answered, methodology and the organization of study.

Chapter II provided an overview of the budget process, funding flow, and appropriations the Marine Corps receives. Chapter III grouped the funding into six major appropriation categories and explained how each is broken down. Chapter IV incorporates the information contained in the previous two chapters and provides a basis for tracking the TOC for the various procurement programs by appropriation.

Chapter V provided a picture of overall funding the Marine Corps receives and the percentage each major appropriation category provided. This chapter also analyzed RDT&E, Procurement, Military Personnel, and O&M to provide examples of how to capture and manage TOC for the Marine Corps Procurement Programs.

B. CONCLUSION

This thesis examined the goal of tracking TOC for the Marine Corps procurement programs. As a result of examining four of the six major appropriations that make up approximately 95 percent of the funding for the Marine Corps, there is a strong possibility that this goal can be achieved. The ability to track TOC in the RDT&E and Procurement appropriations is already a reality, and with a few procedural modifications the ability to track these cost would be greatly enhanced.

The Military Personnel appropriations will remain an estimate unless further resources are available to account for average personnel costs. This does not restrict the ability to track TOC within this appropriation, but there will be inconsistencies since they are estimates. This thesis presented one way of calculating personnel costs, but further studies should be conducted to determine the best method for the Marine Corps.

The O&M appropriation will require the most effort to track TOC. The accounting system does not provide the required visibility, so historical data would need to be collected from the maintenance system (MIMMS). Since this system was designed as a maintenance system and not an official accounting system, there are some inconsistencies contained within the data. With ATLASS II+ replacing MIMMS over the

next couple of years, further analysis should be conducted to look into the feasibility of correcting these inconsistencies.

The ability to capture and apply TOC for the Marine Corps procurement programs is a strong possibility. With additional resources and command support, an expanded overview of TOC could be maintained. Implementing procedural and system changes will significantly increase the ability to track TOC and provide a more accurate funding profile for program managers.

C. RECOMMENDATIONS

The analysis for this thesis provided direction into ways that would enhance the ability to track TOC for the Marine Corps procurement programs. With such a new and vast topic, the purpose of these recommendations is to suggest ways of improving TOC without inundating established practices and supporting systems. Key improvements in each of the major appropriations will allow enhancements to be made without causing unnecessary turmoil.

1. RDT&E

The RDT&E Navy (1319) is very logical and can be followed in the accounting system. Since the RDT&E project numbers are part of the accounting records, one can easily track the funding for a specific procurement program. If the same methods were applied to the RDT&E Defense (0400) and Foreign Comparative Testing (0450), the ability to track TOC in these appropriations would be greatly enhanced.

2. Procurement

This appropriation is the linchpin in establishing TOC for the Marine Corps procurement programs. Key data fields need to be established to link the major appropriation categories and allow TOC to be tracked for the life cycle of the procurement programs. To establish this the procurement appropriation will need to correlate the BLI and procurement project numbers, provide consistency in the assignment of procurement project numbers, and employ identifiable links to other major appropriation categories.

The first step to improve TOC with this appropriation would be to correlate the BLI and the procurement project numbers for all the procurement appropriations. This would give a common and consistent reference that would enable all involved to easily compare BES and accounting records. The importance of this simple correction is that anyone with access to the information would be able to easily compare financial data.

Procurement project numbers are not consistent in the four procurement appropriations. Procurement project numbers are structured in the Procurement Marine Corps appropriation (1109) and Procurement Ammunitions Navy and Marine Corps (1508), but have no set structure in the Procurement, Defense Wide (0300) and the Procurement, National Guard and Reserve Equipment (0350). This inconsistency reduces the ability to track TOC within the procurement appropriation.

Another key area to improve TOC is to link procurement cost data with the other major appropriations. Since each major appropriation already has a key field (RDT&E

has the RDT&E Project Number, Procurement has the Procurement Project Number, O&M has the TAMCN, and Military Personnel has the MOS), the logical choice would be to assign fields in a line of accounting that would be easily identifiable. This would allow queries in the accounting system to capture the required data.

3. Military Personnel

The ability to track Military Personnel, Marine Corps and the Military Personnel, Marine Corps Reserve is limited in allocation accounting. There needs to be further research to determining how much each MOS costs. This question becomes more complicated when one takes into consideration the bonuses, incentive, proficiency, severance, and other costs included in the payment of active duty and reserve personnel.

4. Operations and Maintenance

This appropriation is where visibility is lost for the Marine Corps procurement programs. The ability to track TOC in this appropriation is of major concern when determining LCC. With funding being sent to every command in the Marine Corps, the ability to capture consistent data has been limited to the level of detail imputed into the accounting and supply systems. With ATLASS II+ now replacing SASSY as the Marine Corps Supply system, the ability to track TOC needs to be explored within this system.

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APPENDIX A. APPROPRIATION STRUCTURE

A. RDT&E

1. Department of the Navy

BA	NOMENCLATURE
1	Basic Research
2	Applied Research
3	Advanced Technology Development
4	Demonstration and Validation
5	Engineering and Manufacturing Development
6	RDT&E Management Support
7	Operational Systems Development

2. Defense Wide

BA	NOMENCLATURE
1	Basic Research
2	Applied Research
3	Advanced Technology Development
4	Demonstration and Validation
5	Engineering and Manufacturing Development
6	RDT&E Management Support
7	Operational Systems Development

3. Defense Comparative Testing

BA	NOMENCLATURE
6	RDT&E Management Support

B. PROCUREMENT

1. Marine Corps

BA	NOMENCLATURE
1	Ammunition (FY 96 and prior)
2	Weapons and Combat Vehicles
3	Guided Missiles and Equipment
4	Communications and Electronics
5	Support Vehicles
6	Engineer and Other Equipment
7	Spares and Repair Parts

2. Navy and Marine Corps Ammunition

BA	NOMENCLATURE
1	Navy
2	Marine Corps (FY 97 to present)

3. Defense

BA	NOMENCLATURE
1	Major Equipment
2	Special Operations Command
3	Chemical/Biological Defense

4. National Guard and Reserve Equipment

BA	NOMENCLATURE
1	Reserve Equipment
2	National Guard Equipment

C. MILITARY PERSONNEL

1. Marine Corps

BA	BSA	NOMENCLATURE
1		**Pay and Allowance Officers**
	A	Basic Pay
	B	Retired Pay Accrual
	C	Incentive Pay for Hazardous Duty
	D	Special Pay
	E	Basic Allowance for Quarters (FY 98 and prior, Not valid after Jan 1, 1998)
	E-1	Basic Allowance for Housing (Effective Jan 1, 1998 and subsequent years)
	F	Variable Housing Allowance (FY 98 and prior, Not valid after Jan 1, 1998)
	G	Basic Allowance for Subsistence
	H	Station Allowance, Overseas
	I	CONUS COLA
	J	Clothing Allowance
	K	Family Separation Allowance
	L	Separation Payments
	M	Social Security Tax – Employer's Contribution
2		**Pay and Allowances of Enlisted Personnel**
	A	Basic Pay
	B	Retired Pay Accrual
	C	Incentive Pay for Hazardous Duty
	D	Special Pay
	E	Special Duty Assignment Pay
	F	Reenlistment Bonus
	G	Enlistment Bonus
	H	Basic Allowance for Quarters (FY 98 and prior, Not valid after Jan 1, 1998)
	H-1	Basic Allowance for Housing (Effective Jan 1, 1998 and subsequent years)
	I	Variable Housing Allowance (FY 98 and prior, Not valid after Jan 1, 1998)
	J	Station Allowance, Overseas
	K	CONUS COLA
	L	Clothing Allowance
	M	Family Separation Allowance
	N	Separation Payments
	O	Social Security Tax – Employer's Contribution
3		**Pay and Allowances of Cadets and Midshipmen** (This is Not Applicable to the Marine Corps)
4		**Subsistence of Enlisted Personnel**
	A	Basic Allowance for subsistence
	B	Subsistence in Kind

5 **Permanent Change of Station Travel**
- A Accession Travel
- B Training Travel
- C Operational Travel Between Duty Stations (Within CONUS and Within Overseas)
- D Rotational Travel to and from Overseas
- E Separation Travel
- F Travel of Organized Units

6 **Other Military Personnel Costs**
- A Apprehension of Military Deserters, Absentees, and Escaped Military Prisoners
- B Interest on Uniformed Service Savings Deposits
- C Death Gratuities
- D Unemployment Benefits
- E Survivor Benefits
- F Education Benefits
- G Adoption Expenses

2. Marine Corps Reserve

BA BSA NOMENCLATURE

1 Unit Individual Training
- A Training – Pay Group A
- B Training – Pay Group B
- F Training – Pay Group F
- P Training – Pay Group P

2 Other Training and Support
- E Mobilization Training
- R School Training
- S Special Training
- T Administration Training
- U Education Benefits
- C Platoon Leaders' Class and Reserve Officers Candidates
- G Junior ROTC

D. OPERATIONS AND MAINTENANCE

1. Marine Corps

BA	AG	SAG	NOMENCLATURE
1			Operating Forces
	A		Expeditionary Forces
		1A	Operating Forces
		2A	Field Logistics
		3A	Depot Maintenance
		4A	Base Support
		8A	Maintenance of Real Property
	B		Prepositioning
		1B	Maritime Preposition (MPS and TAVB)
		2B	NALMEB
2			Mobility Operations (Not applicable to the Marine Corps)
3			Training and Recruiting
	A		Accession Training
		1C	Recruit Training
		2C	Officer Acquisition
		3C	Base Support
		5J	Maintenance of Real Property
	B		Basic Skills and Advanced Training
		1D	Specialized Skills Training
		2D	Flight Training
		3D	Professional Development Education
		4D	Training Support
		5D	Base Support
		6K	Maintenance of Real Property
	C		Recruit and Other Training Education
		1F	Recruit and Advertising
		2F	Off-Duty and Voluntary Education
		3F	Junior ROTC
		4F	Base Support
		7L	Maintenance of Real Property
4			Administration and Servicewide Support
	A		Administration and Servicewide Support
		1G	Logistics Support
		2G	Special Support
		3G	Servicewide Transportation
		4G	Administration
		5G	Base Support
		9Z	Maintenance of Real Property
		9X	Commissary Operations

2. Marine Corps Reserve

BA	AG	SAG	NOMENCLATURE

1			Operating Forces
	A		Expeditionary Forces
		1A	Operating Forces
		3A	Depot Maintenance
		4A	Base Support
		5A	Training
		8A	Maintenance of Real Property
2			Mobility Operations (Not applicable to the Marine Corps)
3			Training and Recruiting (Contained in BA-4 for the Reserves)
4			Administration and Servicewide Support
	A		Administration and Servicewide Support
		1G	Logistics Support
		2G	Special Support
		3G	Servicewide Transportation
		4G	Administration
		5G	Base Support
		6G	Recruiting and Advertising
		9Z	Maintenance of Real Property
		9X	Commissary Operations

3. Defense Agencies

					RDT&E	**FY 88**	**FY 89**	**FY 90**	**FY 91**	**FY 92**	**FY 93**	**FY 94**	**FY 95**	**FY 96**	**FY 97**	**FY 98**	**FY 99**
97	0400				Defense	0	0	0	0	0	10,797	44,243	38,481	35,426	36,873	44,938	34,460
97	0450				Defense, Foreign Comparative Testing	0	0	0	0	0	0	0	0	0	1,047	896	3,112
17	1319				Navy	189,617	230,249	230,646	255,488	211,998	220,039	212,846	197,735	218,327	274,266	267,032	358,032
					RDT&E Total	189,617	230,249	230,646	255,488	211,998	230,836	257,089	236,216	253,753	312,186	312,866	395,604
					RDT&E Percentile	2.00%	2.37%	2.42%	2.22%	2.18%	2.44%	2.91%	2.60%	2.56%	2.98%	2.92%	3.50%
					Procurement												
97	0300				Defense	0	0	0	0	0	0	0	5,256	13,980	80,774	57,873	95,139
97	0350				National Guard and Reserve Equipment	0	0	0	0	19,800	7,900	30,852	11,782	38,565	25,917	71,480	2,000
17	1109				Marine Corps	930,876	1,032,103	873,678	702,358	397,536	573,619	307,666	331,848	350,592	502,858	440,819	856,800
17	1508				Navy and Marine Corps Ammunition	362,723	259,737	226,056	453,331	283,159	179,590	46,623	132,994	175,127	131,764	122,282	162,829
					Procurement Total	1,293,599	1,291,840	1,099,734	1,155,689	700,495	761,109	385,141	481,880	578,264	741,313	692,454	1,116,768
					Procurement Percentile	13.65%	13.32%	11.53%	10.04%	7.21%	8.03%	4.36%	5.31%	5.84%	7.07%	6.46%	9.89%
					Military Personnel												
17	1105				Marine Corps	5,562,912	5,678,991	5,798,830	6,374,780	6,102,580	5,904,197	5,732,414	5,762,211	5,724,039	5,976,088	6,026,276	6,216,159
17	1108				Marine Corps Reserve	294,200	314,980	314,383	285,684	345,005	340,256	344,082	351,824	384,642	392,979	389,865	406,616
					Military Personnel Total	5,857,112	5,993,971	6,113,213	6,660,464	6,447,585	6,244,453	6,076,496	6,114,035	6,108,681	6,369,067	6,416,141	6,622,775
					Military Personnel Percentile	61.82%	61.79%	64.12%	57.88%	66.37%	65.90%	68.78%	67.32%	61.67%	60.71%	59.66%	58.65%
					Operations and Maintenance												
97	0100				Defense Agencies	0	0	0	0	0	0	0	31,028	20,901	30,615	33,996	29,029
17	1106				Marine Corps	1,830,697	1,839,847	1,850,507	3,225,182	2,146,464	1,968,766	1,902,489	1,876,885	2,489,287	2,351,654	2,436,163	2,533,688
17	1107				Marine Corps Reserve	68,878	77,418	78,382	71,193	94,133	79,615	91,244	85,000	102,517	109,712	116,449	114,493
17	1160				Revolving Account	0	0	0	0	0	0	0	0	0	0	0	5,500
					Operations and Maintenance Total	1,899,575	1,917,365	1,928,889	3,296,375	2,240,597	2,048,381	1,993,733	1,992,913	2,612,705	2,491,981	2,586,608	2,682,710
					Operations and Maintenance Percentile	20.05%	19.77%	20.23%	28.64%	23.06%	21.62%	22.57%	21.94%	26.37%	23.75%	24.13%	23.76%
					Military Construction												
97	0500				Defense Agencies	0	0	0	0	0	0	0	4,552	1,871	2,201	1,863	3,712
97	0510				BRAC	0	0	0	0	0	0	0	24,352	36,631	53,827	48,928	35,142
17	1205				Military Construction	234,508	267,211	161,909	140,049	114,361	190,251	122,056	98,519	143,134	157,132	179,529	144,919
17	1235				Military Construction Reserve	0	0	0	0	0	0	0	0	0	0	0	0
17	7035				Family Housing	0	0	0	0	0	0	0	125,443	170,967	159,609	146,570	152,557
					Military Construction Total	234,508	267,211	161,909	140,049	114,361	190,251	122,056	252,866	352,603	372,769	376,890	336,330
					Military Construction Percentile	2.48%	2.75%	1.70%	1.22%	1.18%	2.01%	1.38%	2.78%	3.56%	3.55%	3.52%	2.98%
					Other												
97	0131				Real Property Maintenance Defense	0	0	0	0	0	0	0	0	0	0	0	0
97	0828				Environmental Economic Growth	0	0	0	0	0	0	0	0	0	0	0	0
97	0839				Quality of Life Enhancements, Defense Real Property Maintenance	0	0	0	0	0	0	0	0	0	53,574	44,721	23,213
97	1084				Military to Military Contact Program	0	0	0	0	0	0	0	578	0	0	0	0
17	1804				Official Representation Funds, Navy	0	0	0	0	0	0	0	0	0	0	0	0
97	3131				Real Property Maintenance Defense	0	0	0	0	0	0	0	0	0	0	0	0
97	4930				Defense Buisness Operating Fund (X)	0	0	0	0	0	0	0	0	0	0	0	0
97	4964				Defense Emergency Response Fund	0	0	0	0	0	0	0	0	0	148,934	288,540	114,322
97	5059				Wildlife Conservation in Military Reservation, Navy	0	0	0	0	0	0	0	0	0	0	0	0
97	5188				Disposal of DoD Real Property	0	0	0	0	0	0	0	0	0	0	0	0
97	5189				Lease of DoD Real Property	0	0	0	0	0	0	0	200	0	21	82	59
97	8716				Gift Fund (X)	0	0	0	0	0	0	0	3,119	0	1,307	1,062	201
					Other Total	0	0	0	0	0	0	0	3,897	0	203,836	334,405	137,795
					Other Percentile	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%	0.00%	1.94%	3.12%	1.22%
					TOTAL	9,474,411	9,700,636	9,534,391	11,508,065	9,715,036	9,475,030	8,834,515	9,081,807	9,906,006	10,491,152	10,719,364	11,291,982

97	**0100**				**Operations and Maintenance, Defense Agencies**												
Budget		Budget															
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
					Port Handling/Inland Transportation								31,028	20,901	30,615	33,996	29,029
					Commercial Ticketing Program												
					OM Defense Agencies Tota	0	0	0	0	0	0	0	31,028	20,901	30,615	33,996	29,029
97	**0131**				**Real Property Maintenance Defense**												
Budget		Budget															
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0											
					Real Property Maintenance Defense	0	0	0	0	0	0	0	0	0	0	0	0
97	**0300**				**Procurement, Defense Wide**												
Budget		Budget															
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
			200400										1,425				
			250400										3,831	13,980			
			27H000												14,989		
			27J000												65,785	57,873	80,217
			27J001														4,815
			27J002														10,107
					Defense Wide Total	0	0	0	0	0	0	0	5,256	13,980	80,774	57,873	95,139
97	**0350**				**Procurement, National Guard and Reserve Equipment**												
Budget		Budget															
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
			100300							9,800							
			100500							10,000		30,572	11,782	38,565			
			102000														
			103000														
			105000								7,900						
			106000									280					
			27B000												25,917		
			010051													71,480	2,000
					National Guard and Reserve Equipment Tota	0	0	0	0	19,800	7,900	30,852	11,782	38,565	25,917	71,480	2,000
97	**0400**				**RDT&E Defense Wide**												
Budget		Program															
Activity	P1#	Element	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
			MAAC00	MAAC00	Joint Theater Missile Defense										0	7,334	
			MAAC51	MAAC51	Joint Theater Missile Defense										6,944		
			MAAH00	MAAH00									26,800	22,819			
			MAAR00	MAAR00													3,937
			MAAR01	MAAR01	USMC FO Interoperability												296
			MAAR02	MAAR02	TMD System Exerciser												420
			MAAR03	MAAR03	TAMD Integration												100
			MBBE00	MBBE00	Physical Security Equipment												200
		0603384B	MEEA00	MEEA00	Chemical & Biological Defense Program								990	950			
			MEEB00	MEEB00									3,960	5,771	17,694	26,696	20,787
			MEEC00	MEEC00										2,123	3,760		
			MEED00	MEED00												4,329	2,421
			110400	110400							3,255	5,961					
			130500	130500											2,548	18	
			130501	130501												610	598
			130502	130502												50	250
			130503	130503												37	
			250400	250400								29,629					
			C27F0	C27F0	Radio Battalion Modifications						3,917	4,880	3,420	0	2,958	2,950	2,912
			C27G0	C27G0	Radio Battalion Modifications						1,542	1,486	2,044	2,613	1,860	2,152	2,539
			C27L0	C27L0	Radio Battalion Modifications						240						
			C27M0	C27M0	Radio Battalion Modifications						355						
			C27N0	C27N0	Radio Battalion Modifications						1,488	2,287	1,267	1,150	1,111	762	
					Defense Wide Total	0	0	0	0	0	10,797	44,243	38,481	35,426	36,873	44,936	34,460

97	0450				RDT&E Defense, Developmental Test and Evaluation													
Budget		Program																
Activity	P1#	Element	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
		0605804D		HMMA00											1,047		
		0605804D		5103A	Foreign Comparative Testing											424	100
		0605804D		5103L												83	78
		0605804D		5103N												284	287
		0605804D		5103S												100	1,598
		0605804D		5103T												5	91
		0605804D		5103V												0	958
					Defense Foreign Comparative Testing Tota	0	0	0	0	0	0	0	0	0	1,047	896	3,112
97	0500				Military Construction, Defense Agencies													
Budget		Budget																
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0							4,552	1,871	2,201	1,863	3,712
					Defense Agencies Tota	0	0	0	0	0	0	0	4,552	1,871	2,201	1,863	3,712
97	0510				Base Closure													
Budget		Budget																
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0							24,352	36,631	53,827	48,928	35,142
					Base Closure Total	0	0	0	0	0	0	0	24,352	36,631	53,827	48,928	35,142
97	0828				Environmental Economic Growth													
Budget		Budget																
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0											
					Environmental Economic Growth Tota	0	0	0	0	0	0	0	0	0	0	0	0
97	0839				QUALITY OF LIFE ENHANCEMENTS, DEFENSE REAL PROPERTY MAINTENANCE													
Budget		Budget																
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0									53,574	44,721	23,213
					Defense Real Property Maintenance Tota	0	0	0	0	0	0	0	0	0	53,574	44,721	23,213
97	1084				Military To Military Contact Program													
Budget		Budget																
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0							578				
					Military to Military Contract Program Tota	0	0	0	0	0	0	0	578	0	0	0	0

17	1105				Military Personnel, Marine Corps (MP,MC)												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
					Pay and Allowance of Officer												
1A	5				Basic Pay, Officers	598,742	623,555	645,475	706,372	680,517	688,049	682,600	690,151	711,379	733,642	750,484	781,834
1B	10				Retired Pay Accural	306,555	313,032	283,498	305,859	290,579	250,448	245,737	245,004	234,046	239,168	228,898	236,112
1E	15				Basic Allowance for Quarters	74,183	78,774	81,054	90,070	84,396	84,950	83,201	87,626	88,893	92,708	24,198	
1F	20				Variable Housing Allowance	25,040	28,727	30,662	36,717	34,640	33,447	32,374	30,771	31,366	30,938	10,777	
1E	25				Basic Allowance for Housing											97,538	140,070
1G	30				Basic Allowance for Subsistence	27,481	28,712	29,616	28,999	31,050	31,410	31,066	31,108	32,060	32,992	33,476	34,008
1C	35				Incentive Pays	18,526	18,555	30,438	30,518	29,884	30,691	27,631	27,033	27,064	32,202	34,156	38,551
1D	40				Special Pays	341	339	1,048	7,301	898	1,483	1,071	993	1,229	1,192	1,408	1,302
1H	45				Allowances	18,483	14,720	13,273	18,073	17,651	20,334	22,673	27,037	22,530	20,314	16,207	15,055
1L	50				Separations Pay	10,306	12,904	12,644	16,076	18,816	40,256	29,376	14,703	17,565	20,686	12,651	13,312
1M	55				Social Security Tax	50,390	53,541	59,625	62,367	59,640	59,694	58,968	59,070	61,022	62,737	63,842	65,891
					Pay and Allowance of Officer Subtota	1,130,047	1,172,859	1,187,333	1,302,352	1,248,071	1,240,762	1,214,697	1,213,496	1,227,154	1,266,579	1,273,635	1,326,135
					Pay and Allowance of Enlistec												
2	60				Basic Pay, Enlisted	2,110,293	2,162,092	2,259,583	2,542,155	2,417,067	2,373,668	2,337,870	2,369,627	2,418,903	2,489,100	2,540,521	2,615,278
	65				Retired Pay Accrual	1,080,316	1,085,376	991,826	1,100,190	1,029,839	862,124	839,696	839,334	794,048	809,446	772,922	787,830
	70				Basic Allowance for Quarters	254,556	268,621	283,399	327,556	292,988	278,425	263,229	265,495	278,835	282,532	69,612	
	75				Variable Housing Allowance	86,862	96,588	101,092	113,529	107,518	102,876	91,211	86,408	82,344	81,784	20,805	
	80				Basic Allowance for Housing											279,580	392,086
	85				Incentive Pays	4,822	5,304	6,250	7,168	6,675	6,055	5,990	6,482	6,272	6,159	7,727	8,690
	90				Special Pays	98,714	85,996	88,411	152,051	66,852	59,120	41,003	41,541	43,972	47,057	53,984	58,194
	95				Allowances	127,027	113,104	123,214	159,112	155,184	170,529	157,938	174,383	158,410	143,875	151,551	136,486
	100				Separations Pay	24,456	31,512	30,042	56,636	105,073	154,198	109,270	75,409	64,637	58,743	54,004	55,943
	105				Social Security Tax	179,462	186,612	211,081	225,634	213,186	208,180	205,765	204,803	210,729	215,417	218,432	223,040
					Pay and Allowance of Enlisted Subtota	3,966,508	4,035,207	4,094,898	4,684,031	4,394,382	4,215,175	4,051,972	4,063,482	4,058,150	4,134,113	4,169,138	4,277,547
					Subsistence of Enlisted Personne												
4	115				Basic Allowance for Subsistence	191,016	190,864	193,854	177,863	212,033	203,131	201,173	230,680	204,381	207,154	221,846	236,172
4	120				Subsistence in Kind/Operational Rations	86,681	91,568	128,713						0	134,641	144,892	135,138
					Subsistence of Enlisted Personnel Subtota	277,697	282,432	322,567	177,863	212,033	203,131	201,173	230,680	204,381	341,795	366,738	371,310
					Permanent Change of Statior												
5	125				PCS Accession Travel	25,481	26,123	27,353	25,417	25,516	26,873	24,204	26,469	27,385	28,637	27,669	28,203
	130				PCS Training Travel	5,201	5,559	6,009	5,483	6,793	6,790	2,552	3,004	4,529	4,589	6,604	6,652
	135				PCS Operational Travel	38,287	37,358	41,594	45,887	51,226	53,459	59,021	53,118	68,040	60,483	55,264	58,465
	140				PCS Rotational Travel	73,537	76,517	76,603	62,094	78,457	66,465	80,412	86,402	83,617	81,562	76,535	79,234
	145				PCS Separation Travel	40,530	40,771	40,502	43,991	54,441	53,533	45,114	46,371	39,523	41,273	45,508	45,799
	150				PCS Unit Moves	353	0	903	0	654	1,059	137	157	284	515	1,405	1,194
	155				Non-temporary Storage	3,196	3,166	3,078	2,666	3,341	3,033	3,969	4,311	3,695	3,592	3,985	4,123
	160				Temporary Lodging Expense	1,189	817	752	679	786	1,108	1,675	1,620	2,275	2,044	1,658	1,751
	165				Other										1,668	2,274	1,669
					Permanent Change of Station Subtota	187,774	190,311	196,884	186,217	221,214	214,260	217,084	223,452	229,548	224,363	220,902	227,090
					Other Military Personnel Costs												
6	170				Aprehension of Military Deserters	847	834	864	1,005	1,203	1,061	1,061	797	1,034	900	871	878
	175				Interest on Savings Deposits								10	12	16	14	14
	180				Payment of Death Gratuity	567	612	507	12,264	1,152	1,044	762	876	924	930	930	978
					SGLI												
	185				Unemployment Compenstation	14,200	11,000	11,000	13,700	44,740	50,840	54,931	37,615	34,998	28,795	25,420	26,242
	190				Survivor Benefits	3,472	3,504	2,823	2,800	2,900	3,310	2,550	2,368	1,818	1,980	2,068	1,664
	195				Education Benefits Trust Fund						859	1,779	3,197	4,097	5,286	6,481	14,939
	200				Adoption Expense				150	0	162	167	75	75	45	45	45
	205				Advance Military Pay												
	210				Other												
					Other Military Personnel Costs Subtota	19,086	15,950	15,194	29,919	49,995	57,296	61,250	44,938	42,958	37,952	35,829	44,760
	215				Less Reimbursables	(18,200)	(17,768)	(18,046)	(5,602)	(23,115)	(26,427)	(13,762)	(13,837)	(38,152)	(28,714)	(39,966)	(30,683)
					Military Personnel Total	5,562,912	5,678,991	5,798,830	6,374,780	6,102,580	5,904,197	5,732,414	5,762,211	5,724,039	5,976,088	6,026,276	6,216,159

17	1106				Operations and Maintenance, Marine Corps (O&M, MC)												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
1					Operating Forces												
					Expeditionary Forces												
1	10	1A1A			Operating Forces	324,063	326,006	355,866	1,213,204	356,915	367,994		367,007	367,829	394,665	392,147	387,202
	20	1A2A			Field Logistics					172,578	166,253		143,800	161,432	167,060	187,670	221,072
	30	1A3A			Depot Maintenance	367,583	396,609	419,359	846,029	225,893	180,637		171,284	149,320	153,843	139,457	99,413
	40	1A4A			Base Support	716,549	690,703	393,056	433,620	732,585	637,490		521,302	652,514	644,859	704,697	694,924
	50	1A8A			Maintenance of Real Property			222,648	256,140				0	373,683	276,482	300,715	290,560
					Base Communications	20,585	19,782	16,638	21,389								
					Servicewide Activities			47,211	32,564								
												1,335,348					
					Expeditionary Forces Subtota	1,428,780	1,433,100	1,454,778	2,802,946	1,487,971	1,352,374	1,335,348	1,203,393	1,704,778	1,636,909	1,724,686	1,693,171
					Prepositioning												
1	60	1B1B			Maritime Preposition (MPS and TAVB)					87,985	103,147		68,776	74,112	73,277	72,297	81,325
	70	1B2B			NALMEB					5,613	3,786		7,868	5,813	3,167	3,439	4,328
					Prepositioning Subtota	0	0	0	0	93,598	106,933	0	76,644	79,925	76,444	75,736	85,653
					Operating Forces Subtota												
3					Training and Recruiting												
					Accession Training												
3	80	3A1C			Recruit Training	7,421	5,729	5,384	6,810	7,278	7,758		7,700	8,451	9,727	9,963	10,202
	90	3A2C			Officer Acquisition	274	236	298	203	247	248		200	262	257	282	289
	100	3A3C			Base Support					54,629	47,823		52,100	44,558	45,795	44,734	54,343
	110	3A5J			Maintenance of Real Property								0	24,704	16,073	21,003	17,265
						7,695	5,965	5,682	7,013	62,154	55,829	0	60,000	77,975	71,852	75,982	82,099
					Basic Skills and Advanced Training												
	120	3B1D			Specialized Skills Training	17,862	17,250	18,880	21,070	22,536	21,183		24,615	27,729	26,580	28,871	28,208
	130	3B2D			Flight Training	173	175	147	174	184	110		151	150	149	156	161
	140	3B3D			Professional Development Education	4,566	4,591	3,972	3,988	6,123	5,053		5,698	5,152	5,717	6,035	6,478
	150	3B4D			Training Support	37,553	42,150	42,101	49,485	50,290	51,339		73,591	68,999	70,443	71,081	87,337
	160	3B5D			Base Support					62,210	55,085		36,209	51,523	49,143	57,151	55,596
	170	3B6K			Maintenance of Real Property								0	27,517	30,067	25,783	23,977
					Base Communications	3,727	3,017	2,352	2,654								
					Servicewide Activities			7,821	3,531								
						63,881	67,183	75,273	80,902	141,343	132,770	0	140,264	181,070	182,099	189,077	201,757
					Recruit and Other Training Educatior												
	180	3C1F			Recruit and Advertising	56,188	57,811	59,650	51,273	52,738	55,642		61,362	71,226	78,394	88,743	80,634
	190	3C2F			Off-Duty and Voluntary Education	6,324	7,429	8,591	8,827	9,794	11,570		13,201	14,247	15,441	17,597	15,016
	200	3C3F			Junior ROTC	3,563	3,711	3,816	4,001	3,258	4,861		6,236	8,257	8,732	9,003	10,618
	210	3C4F			Base Support	116,693	120,183	70,948	81,604	4,571	5,248		3,463	6,536	7,353	7,172	8,555
	220	3C7L			Maintenance of Real Property			41,904	50,654				0	2,550	1,566	1,570	2,436
					Other	10,063	9,608	9,929	13,811			284,825					
						194,831	198,742	194,845	210,170	70,361	77,321	284,825	84,262	102,816	111,486	124,085	117,257
					Administration and Servicewide Suppor												
4		4A1G			Logistics Support					103,364	79,062		96,247	107,110			
	230	4A2G			Special Support					101,429	87,795		151,470	160,061	195,692	204,116	224,124
	240	4A3G			Servicewide Transportation					42,671	36,534		33,147	31,139	33,185		
	250	4A4G			Administration	126,533	125,860	111,670	115,831	34,753	31,405		23,352	34,093	32,074	26,437	26,509
	260	4A5G			Base Support	6,425	6,196	5,839	7,993	8,820	8,743		8,106	9,352	9,686	12,352	14,590
	270	4A9Z			Maintenance of Real Property	2,552	2,901	2,420	327				0	968	2,247	3,692	1,928
	280	4A9X			Commissary Operations							0	0	0	0	0	86,600
												282,316					
						135,510	134,957	119,929	124,151	291,037	243,539	282,316	312,322	342,723	272,864	246,597	353,751
					MPMC Total	1,830,697	1,839,947	1,850,507	3,225,182	2,146,464	1,968,766	1,902,489	1,876,885	2,489,287	2,351,654	2,436,163	2,533,688
					Base Support									785,934			
					Maintenance of Real Property									435,957			

17	1107				Operations and Maintenance, Marine Corps Reserve (O&M, MCR)												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
					Operating Forces												
1	10	1A5A			Training	11,074	10,870	9,929		13,350	12,449	12,735	12,200	14,461	19,210	21,729	14,435
	20	1A1A			Operating Forces	19,577	24,006	24,117		35,605	23,638	25,466	22,900	29,556	35,784	32,657	33,756
	30	1A4A			Base Support	14,920	15,864	19,114		15,257	17,114	20,583	20,300	15,082	14,961	18,095	16,272
	40	1A8A			Maintenance of Real Property	4,188	3,859	4,009					0	6,535	5,615	6,829	6,976
	50	1A3A			Depot Maintenance	1,538	1,974	1,915		2,098	951	1,754	2,500	2,322	2,923	2,529	2,821
					Maintenance and Repair					3,152							
					Operating Forces Total	51,297	56,573	59,084	0	69,462	54,152	60,538	57,900	67,956	78,493	81,839	74,260
					Administration and Service-Wide Activities												
4	60	4A6G			Recruiting and Advertising	6,501	6,695	6,110		6,862	7,026	7,197	6,500	7,737	7,838	7,815	7,920
	70	4A2G			Special Support					2,079	2,703	6,720	7,500	10,002	10,101	11,199	11,060
	80	4A3G			Servicewide Transportation					3,849	4,995	5,924	5,600	3,280	499	358	4,714
	90	4A4G			Administration					8,985	7,432	6,197	5,700	7,173	6,801	7,012	8,763
	100	4A5G			Base Support					2,896	3,307	4,668	1,800	6,369	5,980	8,226	7,756
						11,080	14,150	13,188									
					Administration and Service-Wide Activities Total	17,581	20,845	19,298	71,193	24,671	25,463	30,706	27,100	34,561	31,219	34,610	40,233
					OM, MCR Total	68,878	77,418	78,382	71,193	94,133	79,615	91,244	85,000	102,517	109,712	116,449	114,493
17	1108				Military Personnel, Marine Corps Reserve (MP,MCR)												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
					Unit and Individual Training												
1A	10				Pay Group A Training (15 Days & Drills 24/48)	124,593	133,264	127,122	85,711	136,372	132,326	132,353	134,315	138,536	136,984	143,593	144,373
1B	20				Pay Group B Training (Backfill for Active Duty)	9,452	10,123	9,648	5,698	8,680	9,647	10,218	12,567	16,293	19,201	17,536	15,735
1F	30				Pay Group F Training (Recruits)	52,547	51,410	56,317	59,329	51,903	49,375	48,514	46,126	49,515	54,399	54,142	55,644
1P	40				Pay Group P Training (Pipeline Recruits)	290	231	167	126	122	69	63	90	230	208	267	232
	50				Other												
					Unit and Individual Training Total	186,882	195,028	193,254	150,864	197,077	191,417	191,148	193,098	204,574	210,792	215,538	215,984
					Other Training and Support												
2E	60				Mobilization Training	4,027	4,221	3,178	2,403	5,440	4,789	4,404	2,386	1,761	1,823	1,961	2,005
2R	70				School Training	8,662	10,056	7,903	6,964	8,344	8,462	7,828	10,541	10,968	9,429	8,549	8,785
2S	80				Special Training	15,512	16,450	17,566	20,931	24,034	21,288	29,435	25,982	33,414	30,756	22,214	34,293
2T	90				Administration and Support	66,361	77,816	81,093	92,512	95,875	96,974	98,671	103,699	113,807	122,482	121,601	121,586
2U	100				Education Benefits	5,731	4,904	5,300	6,700	8,019	9,493	5,679	8,297	9,634	9,778	11,354	15,377
2G	110				ROTC - Senior, Junior, Scholarship	1,440	1,053	1,164	1,637	1,630	2,906	2,745	3,301	5,910	3,273	3,515	3,130
2C	130				Other Programs (PLC, OCS)	5,585	5,452	4,925	3,673	4,586	4,927	4,172	4,520	4,574	4,646	5,133	5,456
					Other Training and Support Total	107,318	119,952	121,129	134,820	147,928	148,839	152,934	158,726	180,068	182,187	174,327	190,632
					MPMCR Total	294,200	314,980	314,383	285,684	345,005	340,256	344,082	351,824	384,642	392,979	389,865	406,616

17	1109				Procurement Marine Corps												
Budget	Budget			RDT&E													
Activity	Line Item	Subhead	Project #	Project #	Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
01					Procurement Ammunitions												
					FY 95 and Before												
02					Weapons and Combat Vehicles												
		2016	P020162		Multiple Launch Rocket System						51,648						
		2045	P020453	C1901	M2 Machine Guns .50 Caliber					2,213							
		2012	P021023		M60E3 PIP					1							
		2111	P021113	C1901	M249 Machine Gun												
		2117	P021173	C1901	MK19 Machine Gun 40mm					4,634							
2	202100	2242		C0021	Amphibious Assault Vehicle 7A1 (AAV7A1) (PIP						2,442	2,524	2,790	1,686	1,376	5,918	89,600
			P022411		RAM Rebuild												
			P022421		AAV Modification Kits												
			P022431		CSS/AAV7A1												
	202200			B0020	AAAV												
	203800		P023781	C1555	Light Armored Vehicle (LAV) PIP							6,545	23,108	19,978	15,507	586	1,400
	203900		P023681	C1555	Light Armored Vehicle (LAV) Air Defense (AD)					1	2,412	72,159				6,541	
	204000			C2508	Light Strike Vehicle												
	206300				Modification Kits (Tracked Vehicles					2,069	22,425	963	1,178	12,099	318	3,372	7,700
			027221		Armor Vehicle Drivers Viewer Enhanced												
			027231		Muzzle Boresight Device												
			027231		LAV												
			027231		M1A1 Tank												
			027232		M249 Ambideztrous Safety					8,700	12,531	4,040	2,105	143	1,636	3,791	
					Sight Base												
			P027261									110					
		2809	028091		M1A1 Tank, Combat												
		2814	028141		M1A1 Tank, Advanced Procuremen												
	210500	2950	P029511		Items Under $2Million (Tracked Vehicles												100
			028241		Items < $2Million (Tracked Vehicles)												
			023681		LAV									1,880	392		
			023721		LAV PIP												
			023751		M88A1 Tool Set, Organ Maintenance												
			024102		Radar Chronograph						2,316	0		242			
			028111		Recovery Vehicle												
			028201		Halon Recovery Recharging System									13	89	44	
			028871		Initial Factory Training						1						
	218500			C2112	155mm Lightweight Towed Howitzer												
	219700			C1901	Meteorlogical Hydrogen Generator												
	219800			C1901	Gun Laying Positioning System (GLIPS												
	220900		P022724		Modification Kits (Artillery)												
	221000	2950	P029502		Items Under $2Million (All Other												2,800
			P020253							580							100
			P021383		Items <$5M (Other)											1,534	
			P021403		RDTE Equipment					0							
			P021413		EOD Equipment					476							
			P023831											1,000			
	221100		P222591		Marine Enhancement Program (MEP)										3,081	941	2,100
	221200				Non Lethal Warfare												
	222000				Weapons and Combat Vehicles under $ 5 Millior												
	233400				Modular Weapons System												
					Acquisition Stability Reserve												
	237100		P2XXXX		Operations Other than War												
						85,723	220,283	398,221	69,023								
					Weapons and Combat Vehicles Subtota	85,723	220,283	398,221	69,023	18,874	93,775	86,341	29,179	37,041	22,399	22,727	103,600
03					Guided Missles and Equipment												
	300600		P035401	C2278	Expeditionary Air Defense System (EADS) MOD					4,863	29,805	3,466		2,947	2,761	1,395	1,000
3	301100	3806	P038061	C1964	JAVELIN										38,148	57,802	82,700
	301300	3602	P036021		Pedestal Mounted Stinger (PMS) Avenger					15,200	32,200	28,325	41,112	22,008	10,552	211	3,200
	302000				Items under $5 Million												
	308900		P38022	C2113	Predator (SRAW)												
		3540			HAWK Modification												
		3830	P037091		TOW					28,100							
		3601	P036011		Stinger Missile												
	312300	3723	P037232		Modification Kits							10,097	140	1,931	2,087	862	
	313800				Items under $2 Million												
			P038871		Initial Factory Training						1			1	1		
			P035411		WDO Modification Kit Test Equipment												
						297,209	338,133	11,055	119,852								
					Guided Missles and Equipment Subtota	297,209	338,133	11,055	119,852	48,163	62,006	41,888	41,252	26,887	53,549	60,270	86,900

04					Communications and Electronics Equipmen													
		4001	P140014		PLRS					6,453		1						
			P040025								17,553							
		4002	P140024		IAS					3,948	5,272		5,251					
		4002	P146294		IDASC					4,169	4,128	2,657	2,788					
	459400	4003	P140034		Tactical Air Operations Module (TAOM)					26,804		1,776	3,651	6,793				
	459700	4005	P140054		Advanced Tactical Air Command Central (ATACC)						6,009	6,349		8,830				
	461100	4006	P140064		Advanced Field Artillery Tactical Data System (AFATDS)							9,962	5,347	5,315				
	468300	4007	P140075		AN/TPQ-36 Fire Finder Radar Upgrade										32,735	557	200	
		4013	P140132		AN/TPQ-36 (Belongs in Telephone)						1,956	1,854	563					
		4024	P140247		Electronic Test Measurement and Diagnostic Equipment							452	708					
		4033	P040337		Generator Signal, Electronics					1,811	1,983							
		4036	P40367		Oscilloscope					1,984								
		4083	P140836															
	483700	4094	P140947		General Purpose Mechanical TMDE						6,663	2						
		4106	P041063		Unit Level Circuit Switch PIP					1,238	893	786	922	4,319	3,066	17,090	4,400	
		4106	P042063		CSS/ULCS					6,812	5,091	1,831						
		4111	P041113		AN/TGC- Tactical Communications Center					253	236	98						
	421300	4169	P041693		Joint Tactical Information Distribution System (JTIDS)							37						
		4255	P142556		AN/TMQ-41, Meteorological Measuring Set							675	4,959	5,465				
	474700	4257	P142576		Intelligence Support Equipment						1		9,257	0				
			P140156		Tactical Remote Sensor System													10,200
			P140506							16,138	28,329	2,830	13,698	635				
			P140526												10,706			
			P140716												1,727			
			P140726		Manpack Secondary Imagery Dissemination System											792		
			P140736		Commander's and Joint Tactical Terminal (CTT &JTT)					2,500	279			1,994	5,925	3,791		
			P140746		TROJAN Spirit II									12,707	957	2,585		
			P140756		Joint Surveillance Target Attack Radar System (JSTARS)								1,282	6,612				
			P140766											6,730				
			P141044		Intelligence Analysis System MEF											4,600		
			P144356		Radio Reconnaissance Equipment Program					7,206	6,927		948		6,877	9,556		
			P145196		Mapping Topographic										2,698			
			P145226		Team Portable COMINT System						3,831							
												8,742	12	5,730	3,368			
	494000		P142596		Marine Enhancement Program									1,579				
	493000		P44017		Night Vision Equipmet													33,600
	494200				ADP Equipment													
	463000		P478XX		Common Computer Resources													
		4268	P140178		AV/PVS-14 Monocular Night Vision Devise					22,250	18,045	12,094	33,699	7,210	20,189	6,542		
			P140257		Stinger Night Sight					2,066	10,971							
			P140288		AN/PAQ-4B Infragred Aim Light								3,622					
			P140318										68					
		4363	P043638		Single Channel Ground & Air Radio (SINCGARS)					50,248	54,576	36,473	64,953	45,824				
	463200	4401	P44401		Maneuver C2 Systems													22,400
			P141693		Joint Tactical Information Distribution System (JTIDS)										1,152	7,196		
			P144058		Data Automated Communications Terminal										5,567	0		
	463100	4404	P44404		Command Post Systems													17,100
			P144038		Global Command and Control System (GCCS)										3,256	4,294		
		4408	P144088		Automated Data Processing					25,933	16,507	6,857	14,840	22,933				
		4412	P144124		TCO									10,682	6,665	9,349		
4	440200	4419	P044197		Auto Test Equipment Systems								2,138	1,771	10,928	12,045	29,200	
	463300	4445	P44445		Radio Systems													46,200
			P041311		Manpack Radio (AN/PSC-5)										144	18		
			P043638		SINGARS Radio										40,597	6,648		
			P046324		LANT STF HQ										2,052			
			P046331		Enhanced Position Location Reporting System (EPLRS)											15,513		
	463400	4446	P044446		Communications Switching & Control Systems													75,400
			P041063		Unit Level Circuit Switch (ULCS)										4,134			
			P042393		Tactical Data Network (TDN)											24,714		
			P042413		Digital Technical Control (DTC) Facility											11,293		
			P044028		Defense Message System (DMS)										4,300	7,114		
	464000	4447	P44447		Air Operations C2 Systems													8,200
			P140034		TAOM										8,122	10,419		
			P140054		ATACC										2,429			
			P140334		CTAPS										340	600		
	464100		P44666		MAGTF CSSE & SE													
					Fire Support System													
	463500		P44448		Communications & Electronics Infrastructure Support													89,900
		4448	P144318												935			
			P144328		MAGTF LOG AIS											769		
			P144338		MCTFS - UDMIPS MISSO SERVER											760		
			P144348		MAISS											58		
			P144368		Network Infrastructure										18,252	18,704		
			P144388		ALTASS											5,652		
			P144398		Manpower and Reserve Affairs										191			
			P144406		Electronic Data Interchange (EDI)										75			

			P144418		Defense Personnel Records Imaging System (DPRIS)										850	524	
			P144428		Joint Recruiting Information Support System (JRISS)										8,607		
			P144438		Base Telephone Infrastructure										32,006	41,348	
			P144448													640	
	475100	4524	P140496		Items under $2 Million (Intelligence)								1,627				2,000
			P143736		Geodetic Survey Set				805	700	247						
			P143746		UYK-31-2 Analytical Photo Positioning System				602	13							
			P143756		Survey Set Hydrographic				231	95							
			P145196		Digital Terrain Analysis Mapping System (DTAMS)							511	184	417			
			P145246														
			P147006		Technical Survel Countermeasures							534	1,702			3	
			P148892								287						
		4587	P145879		Test Calibration and Maintenance Support				756	496	1,113	1,542					
	442900	4588	P045887		General Purpose Electronic Test Equipment				8,764	10,312	11,681	3,690	5,861	8,413	8,435	9,200	
	463600	4823	P44823		Modification Kits (MAGTF C41)												33,800
			P146239		Comsec Cables									53,327	3,008		
			P146309												833		
			P146319												5,475		
			P146329												14,300		
		4723	P047239		Modification Kits (Tel) (MAGTF C4I)				4,401	3,884	3,596	1,087	1,072				
			P147239		Identification Friend of Foe				2,668	1,691	1,301	1,129	7,142				
	463900	4750			Items < $2M (Other)												4,300
		4750	P040288		Power Supply									1,599	1,410		
			P040298		Items Less than $2 Million (Other)									558			
			P040958											125	446		
			P045879											1,273	1,093		
			P048746												1,264		
	474900	4823			Modification Kits (Intelligence)												
			P148239		IAS MOD				3,263	439	2,371	118	924	7,184	1,383	8,400	
			P148249												4,284		
	463700	4850			Items < $2M MAGTF C41												2,400
			P041453		JCSE MODERN				236	254	85	189	246				
			P041454											0	1,412		
			P041593												0		
			P041603												2,805		
			P041613												60		
		4900	P040011		AN/VRC-139 Radio Set				1,357								
			P040051		AN/VRC-113 Radio Set					0							
			P041311		AN/PSC-5 Enhanced Manpack UHF Terminal (EMUT)								9,594				
			P041331		AN/PSC-5 Enhanced Manpack UHF Terminal (EMUT)					3,000		1					
		4901	P040172							7,103	90						
			P041542		AN/MRC-83 Radio Set				18,893		1,015						
			P048422		AN/TRC-170 Radio Terminal				11,470	90							
		4923	P149239		Modification Kits (Other)									10,052	383		
		4950	P040025									37					
			P040152		Control Radio Set					1,287	303		1				
			P040288		Power Supply 0-60 Volt						100	1,934	811				
			P040958		Tool Set, Kits, and Chests								261				
			P041113		TAC COM CENTER				1,749								
			P041382		AN/VIC 2 INTERCOM SET				118								
			P044197		MCATES				1,768	347	446						
			P140014		PLRS					20			568				
			P140132										1,060				
			P140247		Calibration Equipment System								508				
			P140466		LEWDD				670	149							
			P140868		GPS Receivers (AN/PSN-8)				224								
			P141634		Computer Based Multi-Dimensional System					293							
			P142556										13				
			P142648		Modular Univ Laser Equipment (MULE)					75			4,700				
			P145879		Calibration Equipment System								1,025				
			P148746		GPS Survey					1,358			385				
	461100				Multi-Serv ADF Field Art Tact												
	462000				Items under $5 Million (Communications and Electronics)												
			P42453		Ground Mobile Force (GMF)												
	475000				Items under $5 Million (Intelligence)												
			P144214		Tactical Combat Operations (TCO)												
	494000	4259	P142598		Marine Enhancement Program												
	496900				Modification Kits (Nontel)												
	498400				Items under $2 Million (Nontel)												
						297,002	268,539	253,836	238,450								
					Communications and Electronics Equipment Subtota	297,002	268,539	253,836	238,450	237,786	220,856	116,111	181,105	191,186	321,798	269,763	396,900

05					Support Vehicles													
		50R4	P050R41							2,100								
		50R6	P050R61															
	500300	5001	P050011		Commercial Passenger Vehicles							20	161	2,111				
5	500600	5002	P050021		Commercial Cargo Vehicles								60				997	8,800
	500600	5002	P050031		P-19 Aircraft Fire Fighter SLEP												2,851	1,200
	504500	5512	P055122		5/4 Truck HMMWV												3,828	
	508800	5513	P055132		Medium Tactical Vehicle Replacement (MTVR)					2	54,124			7,200			638	1,700
	508900	5515	P055152	C0200	Lt Tactical Vehicle Replacement (LTVR)													69,500
	509300	5701	P057012	C0201	Logistics Vehicle System Replacement												29,364	68,100
			P57032							12,200	11,166	12,819	16,627					3,100
	513200	5753			Trailers							25						
			P057112		M116A2 Chassis, Trailer					1,193	32	60	488		472			
			P057122		M101 Cargo Trailer, 1 ton						1,147		2,032	5,729				
			P057152							8								
			P057192												7,980			
			P057252		M353 Chassis Trailer General Purpose					248								
			P057472		Semi-Trailer, Lowbed, M870A2						5	139	19	4,540	8,576			
			P057502		M970 Semi-Trailer Refueler					4,135								
			P057532		M149A2 Water Trailers, 400 Gal					2,165	222	3	30					
	521900	5723			Modification Kits													
			P057232		ISO Beds Modification Kits					6,181	5,376	11,966	2,630	240	1,340			3,600
	522200	5950			Items Less Than $2 Million										365	933		
			P050301		Marine Security Guard Vehicles											170		
			P050315															
			P055032		Military Motorcycles						674				26			
			P056122		M876A1 Telephone Maintenance Truck													
			P057042		MK48 Air Starter System					1								
			P058871		Initial Factory Training						107			8	45			
	523000		P059503		Items Less Than $5 Million													
						52,726	27,763	20,496	25,119									
					Support Vehicles Subtotal	52,726	27,763	20,496	25,119	28,233	72,853	25,032	22,047	19,828	18,804	38,779	156,000	
06					Engineer and Other Equipmen													
			P06UL01								2,910	202						
			P06UMD1							880	1,120	0						
			P060PJ1									636	9,871					
			P060PY1							498	168	200	1					
			P060P71									382	448	3,309				
			P060P81									31	552	650	2,357	750		
			P060R61							0	200	17						
6	605400	6100	P66456		Environmental Control Equipment Assort									859	2,133			3,000
			P060721		A/C Vertical, 36,000 BTU/60HZ B0005					2,599								
			P060741		A/C Vertical, 60k					4								
			P060761		A/C Vertical, 9,000 BTU					105								
			P060771		A/C Skid Mounted					153								
			P060781		Air Conditioner 9000 BTU/MPI							73	209					
			P060791		Air Conditioner 18000 BTU/MPI					329		256						
			P060801		Air Conditioner 36000 BTU/MPI							1,100	1,674					
			P060851		Air Conditioner 18000 BTU/MPI					2,148		570	391					
			P064561		Enhanced Refrigeration Unit											1,924		
			P064941		Water Chillers													
	627400		P66665		Bulk Liquid Equipment													
	627700		P6XXXX		Tactical Fuel Systems													
	632500		P66041		Demolition Support Systems													2,900
		6139	P061393		Lightweight Decontamination System					2,076	1,984							
		6211	P062111		M9 Armored Combat Earthmover (ACE)						63,418							
		6600	P066003		Shelter Family					7,970	1							
		6604	P066043		Automatic Building Machine (ABM)						2,441	438						
		6665	P060421															
		6665	P066631		Tact Petroleum Lab (Med)							1,118		235		7,698		
			P064781		Fresh Water Purification System					846	2,585					1,204		
			P066501		Sixcon					5,676		35	141					
		6802	P068021		Towed Assault Bridge					3,056								
		6896	P068963		Chemical Agent Monitor					2,443	909	1,247						
	636800	6900			Power Equipment Assorted													
			P069001		Power Eulpment Support													9,600
			P069041		Generator Set 10KW/60HZ B0691					533		749	884	1,034	2,629	591		
			P069051		Generator Set 30KW 400HZ					343								
			P069081		Mobile Electric Power Distribution System (MEPDIS)										945			
			P069111		Generator Set 3KW/60HZ, B0730					0				268				
			P069121		Generator Set 3KW/60HZ, MEP-021													
			P069151										17					
			P069161		Generator Set 10KW/400HZ B0921					616								

			P069171		Generator Set 60KW/400HZ B					817				317	894	714	
			P069191		Generator Set 30KW/60HZ B0953					1,290	1,306	1,129	890	250	2,561	840	
			P069371		Generator Set 100KW/60HZ B1045					421							
			P069421							4							
			P069481		Generator Set 60KW/60HZ B1021					1,828		520	809	170	885	717	
	637000		P062771		Shop Equipment Contract Maintenance (SECM)												8,400
	643200	6001	P060012		Command Support Equipment					0		32				570	4,900
	643800	6003	P060032		Physical Security Equipment											1,490	1,900
	644100	6004	P060042		Garrison Mobile Engineer Equipment					20						2,929	5,500
	644400	6005	P060052		Telephone System									1			
	646400	6006			Amphibious Raid Equipment												3,700
			P060062		Amphibious Raid Equipment					616	5,716	1,716	253	350	1,568		
	645600	6342	P066342		Warehouse Modernization								92			1,576	1,500
	646200	6726	P067192		Material Handling Equipment (SYSCOM)											3,510	
			P667252		Material Handling Equipment (I&L)												
			P667262		1st Destination Transportation											2,411	11,400
		6991	P069913		Industrial/Depot Maintenance					0							
	646800	6992	P069923		First Destination Transportation					4,166	4,710	3,068	3,257	3,014	3,637	3,014	5,900
	669200	6993	P069933		Drug Interdiction					10,583	4,987	2,807	826	419			
	652200	6370	P66370		Field Medical Equipment												2,200
			P063723		Field Medical Equipment							1,333	1	3,148	8,688		
			P068933		CBRIF											9,636	
	653200	6445	P064453		Special Training Devices/Simulators					5,800	15,768	13,573	33,175	56,022	49,967	7,101	3,300
	654300	6601	P666601		Container Family												7,100
			P066013		Container Family					2,156	2,802	6,990	26		7,116	15	
			P066033		Refrigerated Containers					0							
	665400	6723			Modification Kits, Engineer												1,200
			P067231		Modification Kits, Illumination set Large					1,334		18	190	1,441	1,523	1,865	
			P067631								4						
	666900		P969504		Items Less Than $2 Million Compress Air Foam System Mobile Replaced TAU												1,800
	667000				Items Less Than $5 Million												
	669200		P069933		Drug Interdiction												
	669400				Cancelled Account Adjustment												
	669500				Cancelled Account Adjustment												
			P060391		Flipper Mine Dispenser					0							
			P060831		MSV-18 Skid Mounting Assembly					908							
			P060841		MSV-36 Skid Mounting Assembly					265							
			P062111										263				
			P062201		Tool Kit, Carpenter Platoon								71			0	
			P062211		Tool Kit, USMC								88				
			P062761		Shop Set								658				
			P064521		Refrigerant Recovery & Recycling Station					0							
			P064701		Floodlight Set, Trailer Mounted					13							
			P064921		Small Mobile Water Chiller					1,248	483			1,498	838	549	
			P064961		Hose Evacuation Kit (F7028)					174							
			P066471		Tank, Water 3000 gal					220	145		344				
			P066651		CH53 Subsystem						10,693		209				
			P066761		Artillery Survey Set					0							
			P067202		HQMC Items					125	640		73				
			P067631										7		87		
			P068021										2,467				
			P068871		Factory Training						27						
			P068943		Portable Collect Protection System					22	128						
						162,217	120,839	126,075	158,950								
					Engineer and Other Equipment Subtota	162,217	120,839	126,075	158,950	62,283	123,125	38,240	57,887	72,965	85,828	49,094	74,300
07																	
					Spares and Repair Parts												
7	700000		A77020		Spares and Repair Parts	35,999	56,546	63,995	90,964	2,397	1,004	54	378	2,665	480	186	38,900
			070301										0				
					Procurement Total	930,876	1,032,103	873,678	702,358	397,536	573,619	307,666	331,848	350,592	502,858	440,819	856,800

17	1160				Operations and Maintenance, Marine Corps (O&M, MC) Revolving Account												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0											
																	5,500
					Revolving Account Tota	0	0	0	0	0	0	0	0	0	0	0	5,500
	1205				Military Construction												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						234,508	267,211	161,909	140,049	114,361	190,251	122,056	98,519	143,134	157,132	179,529	144,919
					Military Construction Tota	234,508	267,211	161,909	140,049	114,361	190,251	122,056	98,519	143,134	157,132	179,529	144,919
	1235				Military Construction, Reserve												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0											
					Military Construction, Reserve Tota	0	0	0	0	0	0	0	0	0	0	0	0

17	1319				RDT&E													
Budget		Program																
Activity	P1#	Element	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
		0603611M	B0020		Advanced Amphibious Assault Vehicle (AAAV)	0	0	4,611	18,040	29,270	35,714	21,192	32,700	32,223	55,731	67,202	103,966
		0206623M	C0010		Shoulder-Launched Multipurpose Assault Weapons (SMAW)	1,695	2,242	1,424	2,052	1,677	180						
		0206623M	C0018		Fire Support Systems PIP (FSSI)	2,600	5,368	1,500	930								
		0206623M	C0021		Amphibious Assault Vehicle 7A1 (AAV7A1)	10,833	12,058	4,935	9,441	3,988	4,986	0	1,602	936	2,104	297	216
		0605873M	C0030		Marine Corps Studies and Analysis (0605151M)	1,535	1,291	1,106	2,044	2,424	2,183	3,522	2,511	1,836	4,149	3,031	3,174
		0605153M	C0031		Marine Corps Operations Analysis Group (MCOAG)	4,452	5,508	4,580	4,477	4,156	4,509	4,606	4,375	4,304	3,878	3,576	4,188
		0605151M	C0033		Marine Corps Operational Testing & Evaluation Activity (MCOTEA)	571	740	837	1,099	1,268	3,705	1,743	2,818	1,897	2,715	2,216	1,990
		0206626M	C0036		Marine Corps Command and Control Systems (MC C2 System)	135	5,242										
		0206626M	C0045		Tactical Systems Inter/Intra-operability Program (TACSIIP)	2,743	3,643	8,087	11,713	4,407	2,795	2,999	2,371				
		0206313M	C0048		Communications Terminal Improvement	2,936	1,738	2,261	1,419	685	272	844	135	194			
		0208010M	C0049		Unit Level Switches (ULS)	1,829	1,869	752	920	375	645	1,349	3,904	2,118			
		0604719M	C0053		Joint Tactical Information Distribution System (JTIDS)	19	11,363	2,858	6,623	2,000	3,604	4,164	2,375	2,582			
		0206625M	C0062		Intelligence Analysis System (IAS) Commander Tactical Terminal (C	1,822	3,461	4,177	7,960	4,878	4,601	5,417	5,353	3,609	2,181		
		0208010M	C0065		Communications Control (COMM CON)	737	1,836	1,121	1,160	461	477	1,205	3,738	2,358			
		0604270N	C0066		Communications/Non-Communications Countermeasures Support	738	323	448	2,399	147	1						
		0603732M	C0073		Human Resources Management & Forecasting (HRMF)	2,134	3,083	3,909	3,066	3,238	4,675	2,290	1,923	1,234	1,227	1	0
		0206624M	C0076		Medium Tactical Vehicle Replacement (MTVR)	1,808	2,440	1,326	556	632	619	1,480	1,734	6,105	6,364	4,376	1,925
		0603612M	C0077		Mine Warfare (Advanced)	1,149	351	1,815	200								
		0603729M	C0078		Combat Service Support (Advanced)	687											
		0604717M	C0079		Combat Service Support (Engineer)/Combat Clothing and Equipment	0	1,424	457	1,769	604	148	73	102				
		0604612M	C0080		Mine Warfare Combat (Engineer)	3,622	3,669	0	0	15	430						
		0603729M	C0082		Aviation Support Material/Equipment	1,585											
		0206624M	C0085		Amphibious Reconnaissance Equipment	636	769	3,242	1,347	580	55	319	1,160				
		0206626M	C0103		Marine Air Command and Control Systems Operational Development	2,791	3,915	2,418	2,990	676	0	931	1,244	1,117			
		0206624M	C0200		Light Tactical Vehicle Replacement (LTVR)									0	530	185	400
		0206624M	C0201		Logistical Vehicle System Replacement (LVSR)									0	0	0	883
		0206626M	C1067		Aviation Radar Product Improvement Program	3,938	4,262	3,599	2,606	3,998	0	11,670	1,060	457			
		0604780M	C1079		Joint Interoperability of Tactical Command and Control Systems (JIN	1,135	960	1,239	1,005	3,695	940	1,160	1,025	3,209			
		0206623M	C1120		Air Defense Missle System (ADMS) AD Communications Platform (A	1,034	4,949	9,189	8,324	3,755	4,341	4,869	998	7,364	0		
		0603611M	C1293		Stratified Charge Rotary Engine (SCRE)	11,112	7,333	13,387	16,171	11,805	17,057						
		0206625M	C1296		Joint Service Imagery Processing System (JSIPS)	13,929	13,503	8,532	13,064	14,374	8,930	7,769	9,067	7,019			
		0206625M	C1297		Tacical Remote Sensor System (TRSS)	6,104	4,451	2,736	2,170	1,186	2,953	1,585	403	67			
		0605871M	C1424		Tactical Exploitation of National Capabilities (TENCAP)	1,702	1,056	1,380	1,058	1,247							
		0206626M	C1443		Training Devices/Simulators Program	4,943	3,044	1,248	2,841	2,845	2,708	2,218	2,154	2,811			
		0604718M	C1463		Counterintelligence and Security Equipment	1,133	958	943	1,071	351	537	236	88	35			
		0206623M	C1555		Light Armored Vehicle (LAV)	3,323	3,174	2,940	2,206	1,716	1,876	1,617	1,402	1,215	1,329	1,940	1,548
		0603635M	C1598		NBC Equipment	1,639	1,350	2,443	3,468	514	1,755						
		0604657M	C1699		Remote Pioleted Vehicles (RPV)	0											
		0206623M	C1763		Amphibious Armor Systems (AAS) PIP	2,192	1,734	94	290	1,112	419						
		0605502N	C1824		Small Business Innovative Research (SBIR)						2,528	2,265	2,650	2,599	4,700	4,490	
		0206623M	C1901		Marine Corps Ground Weaponry	21,976	8,323	3,352	2,206	2,849	2,668	3,661	1,650	1,381	1,414	6,251	7,462
		0206625M	C1928		Tactical Electronic Reconnaissance Processing and Eval System (TE	5,645	7,488	8,554	10,043	5,976	7,088	3,446	3,637	2,422			
		0604719M	C1929		Advanced Tactical Air Command Central (ATACC)	2,358	9,741	19,587	3,981	7,011	0	8,127	2,675	6,509			
		0206313M	C1931		Communications Ancillary Equipment	550	975	487	992	2,045	1,995	1,119	129	399			
		0206623M	C1960		Light Armored Vehicle-Air Defense (LAV-AD)	17,916	19,928	18,207	13,752	12,187	11,766	6,248	8,244				
		0604270N	C1961		Mobile Electronic Warfare Support System (MEWSS)	591	7,488	1,467	1,874	997		0	2,540	2,653			
		0603635M	C1963		Hyper Velocity Missle (HVM)	1,612	0										
		0603635M	C1964		Joint Anti-Armor Weapons System (JAAWS)/JAVELIN	1,467	6,898	3,409	5,247	415	405	321	170	323	733	327	427
		0604717M	C1966		Surf Zone Container Handler	521	385	0									
		0604612M	C1967		Mine Clearing (Advanced)	765	5										
		0603612M	C1968		Mine Detection Systems (Advanced)	2,055	5	5,438	0								
		0604612M	C1969		Mine Neutralization Equipment	2,365	5,279	4,026	3,727	1,224	2,428	2,213	1,462	1,309	292		
		0604612M	C1970		Surf Zone Mine Clearing	4,253	15,329	23,262	12,344								
		0206313M	C1975		Digital Communications Terminal (DTC)	3,712	5,053	3,676	2,906	879	142	48	188	1,687			
		0603635M	C1981		Ground Air Telerobotics Systems (GATERS)	802	2,347	0	0								
		0604717M	C1983		Tactical Fuel Systems	481	1,287	0	1,103								
		0603612M	C2029		Directed Energy Countermeasures	224	2,160	2,078	3,392								
		0604656M	C2031		Light Armored Vehicle-Assault Gun (LAV-AG)	7,038	0	0	18,329								
		0206626M	C2035		Position Location Reporting System (PLRS) & (GPS)+C34		0	3,081	2,469	1,957	4,052	5,078	473	676			
		0206623M	C2057		DRAGON III												
		0603640M	C2078		Mine Neutralization			0	2,417	4,158	300	5,414	3,845				
		0603640M	C2079		Standoff Mine Detection (SOMD) Systems			0	0	0	2,465	5,050	2,010				
		0603640M	C2080		Weaponry			0	660	1,489	5,451	6,431	4,304				
		0603640M	C2081		Battlefield Electronics Support			0	534	1,877	3,358	4,810	8,345				
		0603640M	C2082		Chemical/Biological Defense		1,350	0	971	2,244	1,864	353	37				
		0604719M	C2085		Advanced Field Artillery Tactical Data System (AFATDS)			2,412	4,256	8,603	7,535	8,754	2,911	1,533			
		0206623M	C2086		Marine Enhancement Program (MEP)			11,678	12,000	12,000	5,639	5,719	3,178	3,262	1,747	1,684	3,009
		0206626M	C2102		Improved Direct Air Support Center (IDASC)					1,188	923	1,247	2,605	870			
		0604612M	C2106		Advanced Countermeasures Systems (ACS)				0	0	3,332	309	5,215	1,648	3,458	616	3,791
		0603635M	C2112		Lightweight 155M Howitzer					0	6,740		6,357	13,927	13,558	36,180	32,332
		0603635M	C2113		Predator (SRAW)					6,852	7,619	24,596	17,340	33,936	27,480	4,611	12,781
		0603640M	C2115		Joint Tactical Directed Energy Weapon (JTDEW) Technology			0	0	474	2,330	1,661	1,004				
		0603640M	C2117		Joint Armor/Anti-Armor Technology (JAAT)			0	0	2,695	2,000	2,509	3,500				

		0603640M	C2118		Advanced Engine/Propulsion Technology			0	0	3,052	2,207		1,549					
			C2122		Tactical Combat Operations Systems (TCOS)					5,711	2,539	5,794	2,418	819				
		0603635M	C2150		Marine Tactical Auto C2 System					0	0	6,362	5,292	5,031				
			C2153		Joint Very Shallow Water Mine Countermeasures (JVSWMCM)					0		662	1,171					
		0603640M	C2223		Marine Corps Advanced Technology (MC ATD) subproject (COBRA)									26,044	24,144	20,737	18,478	
		0206623M	C2237		Amphibious Vehicle Test Branch (AVTB)								1,457	1,816	1,600	1,524	1,960	
			C2240		SBIR admin Marine Corps							25	170	160	190	210		
		0603635M	C2247		Coastal Battlefield Reconnaissance and Analysis (COBRA)									4,252				
		0603635M	C2250		Team Target Engagement Simulator (TTES)									0	1			
		0603635M	C2251		Joint Advance Amphibious Logistics									0	0			
		0603635M	C2255		Individual Combat Weapon									0				
		0603635M	C2256		Integrated Infantry Combat System (IICS) 21 Century Land Warrior									0	0	0	730	
		0206313M	C2270		Command Post Systems									0	9,757	6,025	10,218	
		0206313M	C2271		Maneuver C2 Systems									0	5,985	1,556	2,067	
		0206313M	C2272		Intelligence C2 Systems									0	3,480	3,228	4,348	
		0206313M	C2273		Air Operations C2 Systems									0	7,211	4,354	6,289	
		0206313M	C2274		C2 Warfare Systems									0	3,972	3,384	3,939	
		0206313M	C2275		Radio Systems									0	357	3,293	1,733	
		0206313M	C2276		Communications Switching and Control System									0	3,250	1,850	1,888	
		0206313M	C2277		Systems Engineer and Integration									0	15,186	1,922	7,155	
		0206313M	C2278		Air Defense Base Weapons Systems									0	786	744	2,001	
		0603640M	C2297		Marine Corps Warfighting Laboratory (MCWL)										28,002	26,857	27,905	
		0206313M	C2315		Training Devises and Simulators									0	3,216	7,203	9,368	
		0206624M	C2316		Combat Service Support Engineer Equipment									0	1,079	729	836	
		0206313M	C2317		All Services Combat Identification Evaluation Team (ASCIET)									0	1,213	1,154	0	
		0603851M	C2319		Non-Lethal Warfare DEM/VAL									4,193	9,326	16,072	34,512	
		0206623M	C2320		Light Armored Combat System (LACS)									0				
		0605873M	C2330		Chemical Biological Consequence Management									0	0	927	7,759	
		0603640M	C2362		Extended Littoral Battlespace (ELB)										5,000	9,297	9,804	
		0206313M	C2500		Close Range UAV Data Links										0	4,825	0	
		0603640M	C2501		Project Albert											1,595		
		0206623M	C2503		Initial Issue											0	0	
			C2505		Coastal Battlefield Reconnaissance and Analysis (COBRA)													
		0603635M	C2507		Small Unit Riverine Craft (SURC)											0	0	
		0603635M	C2508		Light Strike Vehicle											0	0	
		0206624M	C2509		Motor Transport Modification											0	0	
		0206313M	C2510		MAGTF CSSE & SE											0	0	
		0603635M	C2614		SMAW Follow-on											0	2,993	
		0603635M	C2615		Trajectory Corrected Munitions (TCM)											0	4,988	
		0206313M	C2664		Joint Task Force Enhanced Communications											0	4,009	
		0206623M	C2666		Automatic Target Tracker (ATT)											0	1,995	
		0206623M	C2667		Shortstop Electronci Protection System (SEPS)											0	1,995	
		0602131M	C3001		Marine Corps Landing Force Technology	16,045	17,101	20,338	16,906	18,036						12,478	12,970	
		0602131M	C3100												16,030			
		0602131M	C3110								2,199	1,514	1,428	960				
		0602131M	C3114								549							
		0602131M	C3125								3,190	2,655	1,951	3,573				
		0602131M	C3140								1,382	2,547	3,020	2,423				
		0602131M	C3150								3,113	2,570	2,557	2,640				
		0602131M	C3160								353							
		0602131M	C3170								2,658	2,617	2,510	2,200				
		0602131M	C3177								2,492	2,776	2,568	2,000				
		0602131M	C3195								1,319	807	700	714				
		0602131M	C3196								2,844	1,494	2,011	2,338				
			C5996								1,451	388	189	9				
			C5998											18				
		0605873M	C9000										13	1,313	891	85		
					RDT&E Total	189,617	230,249	230,646	255,488	211,998	220,039	212,846	197,735	218,327	274,266	267,032	358,032	

17	1508				Procurement Ammunition												
Budget	Budget			RDT&E													
Activity	Line Item	Subhead	Project #	Project #	Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
1					Procurment Ammunition, NAVY												
2					Procurment Ammunition, Marine Corps												
			010R61								187	150		2,092			
2			011101		5.56 mm, SAW					12,603	3,912						
			011141		5.56 mm, Blank A060					7,498	4,247	711	7,101	3,884		1,327	14
			011181		5.56 mm, Tracer												
			011191		5.56 mm, Ball DODIC A059					4,030	3,912			39,624	20,773	28,072	10,501
			011201		5.56 mm, Training Rounds M200 Linked A075					700	1,095			4,979		1,000	507
			011271							5,596							
			012061		5.56 mm, Link, Ball							537					
	101000	1014			5.56 mm, All Types					30,427	13,166	1,248	7,101	48,487	20,773	30,399	11,022
			010921		7.62 mm, Ball Long Range - DODIC AA11									700	875	526	25
			011041		7.62 mm, Match					12							
			011051		7.62 mm, Ball Linked - DODIC A143							3,197		9,150	3,733	2,923	722
			011071		7.62 mm, Linked - DODIC A131					22,732	3,565			8,100			
			011081		7.62 mm, NATO Linked					3,000	1,759						
			011091		7.62 mm, Linked					11							
			011281		7.62 mm, Ball Match								37	1,574			
			012071		7.62 mm, for AK47									424			
	102000	1015			7.62 mm, All Types					25,755	5,324	3,197	37	19,948	4,608	3,449	747
			010061		Linear Charges, Demo HE M913					13,415					5,559	7,819	73
			010651		EWAF Old APOBS											2,290	6,510
			010071		Linear Charges Practice							1					
			010971		Linear Charges ML25										16,188		37
			010141							350							
			012961		Rocket Motor 5in - J143										4,641		50
	103000	1018			Linear Charges, All Types					13,765	0	1	0	0	26,388	10,109	6,670
		1029	013831												6,853	0	0
			010621		Chg Assembly Demo M757												5,639
			010851		Igniter, Time Fuse Blasting MN08												1,823
			012831		Cord, Detonating Pent M456											1,397	4
		1416	014161													6,058	
	150000				Demolition Munitions, All Types					0	0	0	0	0	0	7,455	7,466
			011501		CTG, 40 mm Practice Linked MK19 - B584					10,645					8,856	5,957	11,259
			011571		40 mm, Smoke Green					964							
			011581		40 mm, Smoke Yellow					1,015							
			011591		40 mm HEDP Linked								4,296				
			011601		40 mm Dummy Linked					500							
			011611		CTG 40 mm Practice MR07A1 B519					599	2,549	1,144	489				1,705
			011631		40 mm B576												4,998
			011651		40 mm WS PARA					3,999							
			011661		40 mm B542					44,426	21,872	4,310	7,574				
			014211														
			014421		40 mm Blank Saluting DODIC B550									929			
			014431		40 mm Blank Saluting DODIC B650									645			
			018881		40 mm Blank Saluting							169					
	105000	1115			40 mm, All Types					62,148	24,421	5,623	12,359	1,574	8,856	5,957	17,962
			011361		.50 Caliber Linked DODIC A576						4,392			23,644	1		5,690
			011381		.50 Caliber Dummy								34				
			011391		.50 Caliber Linked Ball						1,896	782	965			748	
			012321		.50 Caliber Sniper Rifle												
			013171		.50 Caliber SLAP						5,867		5,701				
	104000	1135			.50 Caliber, All Types					0	12,155	782	6,700	23,644	1	748	5,690
			011451		60 mm, HE B642 & B643						4,578	4,578	16,015	1	1		7,905
		1147	011471		60 mm, Illum												
		1148	011481		60 mm, Smoke												
		1202	012021		155mm DP ICM Baseburner						81,199						
		1203	013211		Light Anti Armor Weapon												
	108300	1145			60 mm, All Types						85,777	4,578	16,015	1	1	0	7,905
		1238	012381		81mm Smoke RP M819								4,300	5,430	9,406		7,146
		1239	012391		81mm TP M879												
		1247	012471		81mm Illum						2,877		13,043				
		1248	012481		81mm HE						5,659	4,529	15,660	3,279			

		1248	012601		81mm HE w/Fuze							12,890			1			
	109100				81 mm, All Types					0	8,536	17,419	33,003	8,709	9,407	0	7,148	
		1297	012971		25mm Linked M791 A974							2,357	3,744					
			012981		25mm Linked HEI-Y A975						2,860		1,939					
			013001		25 mm CTG TP-T Linked A976						14,213		3,089	7,723		3,016	1,219	
			013011		25mm Dummy Linked A967								88					
			013191		25 mm CTG TPDS Linked A940										1,798	1,891	2,005	
	138800	1297			CTG 25 mm, All Types					0	17,073	2,357	8,860	7,723	1,798	4,907	3,224	
		1334	013341		Rocket 83mm HEAA													
		1377	013771		120mm APFSDS-T					8,000								
		1378	013781		120mm Heat MP-T					26,833								
		1379	013791		120 mm CTG TPT C784								4,937	3,313	1,723	5,500	6,612	
		1380	013801		120 mm CTG, TPCSDS-T C785					5,990			10,313	11,198	2,545	8,143	10,606	
	112100				120 mm, All Types					40,823	0	0	15,250	14,511	4,268	13,643	17,218	
			014161												19,581			
			011321		9mm Ball A363								560	3,258	2,831			
			013051		9mm Spotting Ax10								1,614					
			013321		9 mm, All Types									281	400		3,138	
	142800	1450			9 mm, All Types					0	0	0	2,174	3,539	22,812	0	3,138	
		1488	014881		Fuze Electric Time M762								17,193	1				
		1490	014901		Fuze, Electronic M767, N290											3,423	1,500	
		1847	018471		Fuze N291												5	
	162500	1545			Fuze, All Types					0	0	0	17,193	1	0	3,423	1,505	
	162800		015301		Non Lethals											1,956	984	
			012501		Grenades, Smoke Screening					8,592								
			012541		Grenade Hand Smoke HC G982					1,311				264	449	999	1,158	
			012561		Grenades G940					2,314							1,135	
			012581		Grenades G945					1,647							1,276	
			012591											83				
			012691		Grenades, Smoke Violet DODIC G955									700				
			012741		Hand Grenade Body Practice M69					350								
			012751		Fuze, Hand Grenade Practice DODIC G878									473		975	988	
			013481		Signal, Illum White Star Cluster					499								
			013511		Signal, Smoke L283						329					315	1,239	
			013541											590				
	146800	1545			Grodades, All Types					14,713	329	0	0	2,110	449	2,289	5,796	
			013021		SMAW HX0											7,257	20,000	
			013331		Rocket, 83 mm HEAA Practice DODIC HX07									11,552	8,084	15,049	19,255	
			013361		Rocket,227mm Practice H109								74					
	147100	1549			Rockets, All Types					0	0	0	74	11,552	8,084	22,306	39,255	
			016361		155 mm, All Types												10,023	
		1828	018281		155mm Apers ADAM-S					80,315								
		1837	018371		155mm Prop									1				
	117000				155 mm, All Types					80,315	0	0	0	1	0	0	10,023	
			010021		Cap Blasting Spec Elec								5	331				
			010061											98				
			010241		Training Mines					40								
			010251		Fuze Blast Time 50' M700								1,216					
			010261		Igniter, Time Fuze Blasting DODIC M766									374				
			010431		Simulator Projetc Ground Hurst L594					499	245		924				95	
			010471		Boobytrap Illum					400	0							
			010521										15					
			010581		Flare Surf Trip L495											300	5	
			010731		12 Guage 00 Buck A011					11	199							
			010871		TOW Blast simulator L592					1,892	0							
			010881		Boobytrap Flash L598)						98	232		1,300				
			010991		12 Guage #9 Shot A017												300	
			011221		12 Guage Slug A023									190	96	45	140	
			011231		12 Guage Lockbuster						279							
			011281									1,000						
			011301		.45 Caliber Ball								1,269					
			011401		Rifle Team Ammo							0	80	0	4	0		
			011531		CHRG, DWBS Diversionary MK 141/0									720		698	1,414	
			011681		DST Percussion 175MS Delay MM56							486		537			5	
			011701		Flexible 20 Gram Charge								13	28				
			011911		Cord, Detonating 400 GR FT							4	21					
			011921		Cord, Detonating 200 GR FT								11					

			011931		Cord, Detonating 100 GR FT								6				
			011941		Cord, Detonating 600 GR FT								28				
			012701											49			
			012751									763					
			012831									270		1,893	1,410		
			012961		Rocket Motor 5 in									92			
			013471		Hand Grenade, Simulated							69					
			014190		CTG 9 mm SESAMS (Blue) AA13											280	
			014191		9mm SESAMS (Blue) AA13									268			245
			014201		CTG 9 mm SESAMS (Red) AA12									268		280	245
			014701		.45 Caliber Ball					500	198						
			014991		Smoke Pot Floating HC K511											0	1,808
			015011		CHG, Flexible 20 Gram, mm41							9					30
			015021									3		24			
			015061		CHG, Demo FLSC 30 GR								12				
			015071		CHG, Demo FLSC 40 GR, mm42								19	40		86	20
			015081		CHG, Demo FLSC 60 GR							11	24	70			
			015091		CHG, Demo FLSC 75 GR/FT, mm44							42	115	296		189	28
			015101		CHG, Demo FLSC 125 GR/FT, mm45							23	30	68			5
			015111		CHG, Demo FLSC 225 GR/FT, mm46								32	73		31	15
			015131		CHG, Demo FLSC 400 GR/FT, mm47								24	39		25	12
			015151		CHG, Demo FLSC 600 GR/FT, mm48							28	47	54			5
			015161		CHG, Demo FLSC 1200 GR/FT, mm52							4		20		10	6
			015171		CHG, Demo FLSC 2400 GR/FT, mm53							6		20		21	5
			015181		CHG, Demo FLSC 5400 GR/FT, mm54							8		44		13	16
			015191		Dual Firing Device MK54							25		17			
			015201		CHG, Demo Explosive Sheet 38 FT M980									925			5
			015211		CHG, Demo Explosive Sheet 25 FT									781	483		5
			015221		CHG, Demo Explosive Sheet 19 FT M982									475			142
			015301		Less Than Lethal Munitions									2,701	1,905		
			015791		Marine Security Guard BN (MSGBN)											400	400
			017011		Simulator Project Flash Artiller L602												100
			019001		Ballistic Plates MEUSOC					622						20	
			019011		Small Arms MEUSOC					0	12						
			019021		Miscellaneous MEUSOC					407	33						
			019031		Demolition MEUSOC						12						
			019041		Canine Expl Kit MN01					26			18	38			20
			019051		Component Ammo Eng M31							195	815				
			019911								219	294					
	166300	1950			Items Less Than $2 Million					4,397	1,293	3,472	4,724	11,833	3,898	2,398	5,071
	163000	1996	019961		Ammo Modernization					10,816	11,329	7,796	9,504	19,402	13,568	13,243	12,007
	38				Items Less Than $5 Million												
						362,723	259,737	226,056	453,331								
					Procurement Ammunition Tota	362,723	259,737	226,056	453,331	283,159	179,590	46,623	132,994	175,127	131,764	122,282	162,829
17	**1804**				**Official Representation Funds, Navy**												
Budget		Budget															
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0											
					Official Representation Funds, Navy Tota	0	0	0	0	0	0	0	0	0	0	0	0
97	**3131**				**Real Property Maintenance, Defense**												
Budget		Budget															
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0											
					Real Property Maintenance, Defense Tota	0	0	0	0	0	0	0	0	0	0	0	0
97	**4930**				**Defense Business Operating Fund (X)**												
Budget		Budget															
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0									148,934	288,540	114,322
					Defense Business Operating Fund Tota	0	0	0	0	0	0	0	0	0	148,934	288,540	114,322
97	**4964**				**Defense Emergency Response Fund**												
Budget		Budget															
Activity	P1#	Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0											
					Defense Emergency Response Fund Tota	0	0	0	0	0	0	0	0	0	0	0	0

97	5059				Wildlife Conservation in Military Reservation, Navy												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0											
					Wildlife Conservation in Military Reservation Tota	0	0	0	0	0	0	0	0	0	0	0	0
97	5188				Disposal of DoD Real Property												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0							200	0	21	82	59
					Disposal of DoD Real Property Total	0	0	0	0	0	0	0	200	0	21	82	59
97	5189				Lease of DoD Real Property												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0							3,119		1,307	1,062	201
					Lease of DoD Real Property Total	0	0	0	0	0	0	0	3,119	0	1,307	1,062	201
17	7035				Family Housing, Navy and Marine Corps												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0							125,443	170,967	159,609	146,570	152,557
					Family Housing, Navy and Marine Corps Tota	0	0	0	0	0	0	0	125,443	170,967	159,609	146,570	152,557
97	8242				Foreign Military Sales												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
			11802			0											
			12802														
			21802														
			23802														
			23802														
			25802														
			26802														
					Foreign Military Sales Total	0	0	0	0	0	0	0	0	0	0	0	0
17	8716				Gift Fund (X)												
Budget Activity	P1#	Budget Line Item	Project #		Nomenclature	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
						0											
					Gift Fund Total	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX C. RDT&E BUDGET ESTIMATE SUBMISSION TO CONGRESS

Program Number C0031
Program Element 0605154N
Marine Corps Studies and Analysis

APPN	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
RDT&E	4,452	5,508	4,580	4,477	4,156	4,509	4,606	4,375	4,304	3,878	3,576	4,188

MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project supports the Marine Corps portion of the Department of the Navy's (DoNs) Center for Naval Analyses (CNA) Research Program. It is managed as an element of the Marine Corps Studies System. This program provides the Marine Corps with independent and objective research and analysis of specific issues/topics appropriate for a Federally Funded Research and Development Center (FFRDC). As a result of the finding and recommendations of the Fiscal Year 1997 Defense Science Board, the Marine Corps refocused the type of support CNA provides. This refocusing effort reduced the number of field representatives for the Operational Forces commanders and established five specific areas of expertise for CNA to establish and maintain: (1) Logistics, (2) Manpower, (3) Programs and Resources, (4) Naval Integration, and (5) Operations. The scientific analyst support was also reduced from nine part-time (each providing 20% per year) to five full-time scientific analysts, one for each of the five focus areas. The revised program continues to provide analytical support for field exercise, ad hoc, and quick response requirements.

PROGRAM ACCOMPLISHMENTS AND PLANS:

FY 1988 Accomplishments: PE 0605153M. Provided support in areas including, but not limited to Computer Adoptive Test/Armed Services Vocational Aptitude Battery (CAT/ASVAB), Selective Reenlistment Bonus (SRB), Professional Military Education (PME), Selected Marine Corps Reserve (SMCR) structure, Light Armored Vehicle-Assault Gun (LAV-AG), Advanced Amphibious Assault (AAA), Maritime Prepositioned Ships (MPS) stock rotations, exercise reconstruction, aviation requirements, Landing Craft Air Cushion (LCAC), and field representatives.

FY 1989 Accomplishments: PE 0605153M. Provided analytical support for FY 1991 Marine Corps Amphibious Warfare Appraisal (MCAWA), Cost and Operational Effectiveness Analysis (COEAs), doctrine/organization/tactics evaluation, manpower/force structure issues and field representatives.

FY 1990 Accomplishments: PE 0605153M. Provided analytical support for the MCSS for more than 23 studies and analyses including: Command, Control, and Communications (C3) Analysis; Expeditionary Combat Service Support; Advanced Amphibious Assault Program; Cost and Operational Effectiveness Analyses (COEAs); Unmanned Air Vehicle mixes in support of the MAGTF ACE; and Marine Corps Aviation Suppression of Enemy Air Defense (SEAD).

FY 1991 Accomplishments: Provided analytical support of the MCSS for more than twenty formal studies and analyses including: Desert Shield/Desert Storm Operations Lessons Learned, COEAs, Marine Air Combat Element Study, Marine Portable Avionics Test Equipment, and Marine Corps Recruiting. Also conducted short-term analyses through the CAN Scientific Analyst Program and maintained CAN Field Representatives at six Marine Corps Commands.

FY 1992 Accomplishments: PE 0605153M. Initiated 90% (35 of 39) of the approved Marine Corps FY 92 studies and analyses programmed by CNA. Staffed 5 of the 6 Field Representative and 7 Scientific Analyst

billets in support of Marine Corps Commands. Funded continuation of 11 FY 91 study and analysis initiatives. Completed 28 study and analysis projects including the Advanced Amphibious Assault Program COEA update, Marine Corps Portable Avionics Test Set, Simulation Offset to Live-Fire Training, Job Performance Measures, and the Analysis of Alternative Maritime Prepositioning Forces (MPF) Maintenance cycle sites.

FY 1993 Accomplishments: PE 0605153M.
$2,027 Executed the approved portion of the DoN's FY 1993 Study and Analysis Plan for CNA including "Emerging" and "Quick Response" study and analysis requirements.
$1,403 Staffed 6 field representatives and 7 Scientific Analysts.
$1,084 Continued 7 FY 1992 study and analysis projects.
$4,514

FY 1994 Accomplishments: PE 0605873M
$1,197 Executed the approved portion of the DoN's FY 1994 Study and Analysis Plan for CNA including "Emerging" and "Quick Response" study and analysis requirements.
$1,465 Staffed six field representatives and eight Scientific Analysts.
$1,945 Continued ten FY 1993 study and analysis projects.
$4,607

FY 1995 Accomplishments: PE 0605154N
$1,618 Executed the approved portion of the DoN's FY 1995 Study and Analysis Plan for CNA including "Emerging" and "Quick Response" study and analysis requirements.
$1,588 Staffed six field representatives and eight Scientific Analysts.
$1,200 Continued eleven FY 1994 study and analysis projects.
$4,376

FY 1996 Accomplishments: PE 0605154N
$1,934 Executed the approved Marine Corps Portion of the DoN FY 1996 Study and Analysis Plan for CNA including "Emerging" and "Quick Response" study and analysis requirements.
$1,513 Staffed six field representatives and nine Scientific Analysts.
$875 Continued four FY 1995 study and analysis projects.
$4,322

FY 1997 Accomplishments: PE 0605154N
$1,017 Executed high priority Marine Corps study and analysis projects outlined in the Marine Corps' portion of the approved DoN FY 1997 Study and Analysis Plan for CAN. Additionally, supported three field exercises, two QDR support projects, two "Quick Response" studies, and one emerging study.
$1,543 Staffed six field representatives and nine Scientific Analysts.
$1,573 Funded the continuation of eleven FY 1996 study and analysis projects.
$4,133

FY 1998 ACCOMPLISHMENTS: PE 0605154N

$317 Established and maintained the LOGISTICS Area of Expertise including the funding of one scientific analyst. Executed high-priority study and analysis requirements including the completion of the Class IX War Materiel Requirements study and the Principle End Item Distribution study.

$332 Established and maintained the MANPOWER Area of Expertise including the funding of one scientific analyst. Completed the Climate Survey Battery study and started the Manpower Inventory Projection Model(s) study. Other smaller analysis efforts that were initiated and completed included the Women's Campaign Plan, Unit Cohesion, and Home-Schooling Educational Credentials studies.

$333 Established and maintained the PROGRAMS and RESOURCES Area of Expertise including the funding of one scientific analyst. Executed high-priority study and analysis projects including the initiation of the Relating Readiness to Resources study, and initiated efforts to define the objectives and scope for the Better Business Practices study.

$410 Established and maintained the OPERATIONS Area of Expertise, including providing analysts for field exercise support and the funding of one scientific analyst. Completed the WESPAC Basing study and initiated project development efforts for defining the objectives and scope for the Procedures and Training Enhancements for Combined Arms Engagements and the Joint Task Force Headquarters studies.

$381 Established and maintained the Naval Integration Area of Expertise including the funding of one scientific analyst. Executed a high-priority Command/Element/Component Headquarters study project. Initiated Complex Adaptive Systems research efforts in conjunction with the BIOS consortium.

$901 Funded the staffing of five field representative billets with Commander Marine Forces Pacific (COMMARFORPAC), Commanding General I Marine Expeditionary Force (CG I MEF), Commanding General II Marine Expeditionary Force (CG II MEF), Commanding General III Marine Expeditionary Force (CG III MEF), and Commanding General Marine Corps Air-Ground Combat Center (CG MCAGCC).

$902 Executed several "Quick Response" studies focused on the implementation of the Operational Maneuver From the Sea (OMFTS) concept including the Vision for the Future Marine Corps Employment of Non-Lethal Weapons study; AD HOC support for the USMC Aviation Board, Harrier Aircraft Review Panel, and Aging of the Aviation Enlisted Force and the Joint Force Deployment Planning & Execution studies; and administrative support functions including: General Concept Development CNA Self-Initiated Analysis Efforts, and Award Fee funding.

$3,576

FY 1999 PLAN:

$509 Continue maintenance of the LOGISTICS Area of Expertise including the funding of one scientific analyst. Execute high-priority logistics related study and analysis requirements included in the annual Marine Corps Studies Master Plan.

$462 Continue maintenance of the MANPOWER Area of Expertise including the funding of one scientific analyst. Execute high-priority force structure and personnel related study and analysis requirements included in the annual Marine Corps Studies Master Plan.

$480 Continue maintenance of the PROGRAMS and RESOURCES Area of Expertise including the funding of one scientific analyst. Execute high-priority program, resource, and readiness related study and analysis requirements included in the annual Marine Corps Studies Master Plan.

$511 Continue maintenance of the OPERATIONS Area of Expertise including providing analysts for field exercises and the funding of one scientific analyst. Execute high-priority Joint and MAGTF operations related study and analysis requirements included in the annual Marine Corps Studies Master Plan.

$468 Continue maintenance of the Naval Integration Area of Expertise including the funding of one scientific analyst. Execute high-priority Naval (From the Sea and OMFTS) and non-linearity aspects of combat related study and analysis requirements included in the annual Marine Corps Studies Master Plan.

$868 Continue staffing five field representative billets at COMMARFORPAC, CG I MEF, CG II MEF, CG III MEF, and CG MCAGCC.

$890 Execute 4 to 6 "Quick Response" study projects (start to finish within 90 days); AD HOC supports for the immediate analytical support requirements; and administrative support functions including: General Concept Development, CNA Self-Initiated Analysis Efforts, and Award Fee funding.

$4,118

FY 2000 PLAN:
$495 Continue maintenance of the LOGISTICS Area of Expertise including the funding of one scientific analyst. Execute high-priority logistics related study and analysis requirements included in the annual Marine Corps Studies Master Plan.
$400 Continue maintenance of the MANPOWER Area of Expertise including the funding of one scientific analyst. Execute high-priority force structure and personnel related study and analysis requirements included in the annual Marine Corps Studies Master Plan.
$601 Continue maintenance of the PROGRAMS and RESOURCES Area of Expertise including the funding of one scientific analyst. Execute high-priority QDR, program, resource, and readiness related study and analysis requirements included in the annual Marine Corps Studies Master Plan.
$645 Continue maintenance of the OPERATIONS Area of Expertise including providing analysts for field exercises and the funding of one scientific analyst. Execute high-priority Joint and MAGTF operations and OMFTS implementation related study and analysis requirements included in the annual Marine Corps Studies Master Plan.
$545 Continue maintenance of the Naval Integration Area of Expertise including the funding of one scientific analyst. Execute high-priority QDR, Naval (From the Sea and OMFTS) and non-linearity aspects of combat related study and analysis requirements included in the annual Marine Corps Studies Master Plan.
$684 Fund the staffing of four field representative billets at COMMARFORPAC, CG I MEF, CG II MEF, and CG III MEF. Eliminated the field representative billet at MCAGCC to provide additional funds for study projects.
$998 Execute 5 to 8 "Quick Response" study projects (start to finish within 90 days); AD HOC supports for the immediate analytical support requirements; and administrative support functions including: General Concept Development, CNA Self-Initiated Analysis Efforts, and Award Fee funding.
$4,368

Program Number C0033
Program Element 0605873
Marine Corps Operational Testing and Evaluation Activity (MCOTEA)

APPN	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
RDT&E	571	740	837	1,099	1,268	3,705	1,743	2,818	1,897	2,715	2,216	1,990

Mission Description and Budget Item Justification: This program supports the Marine Corps Operational Test and Evaluation (OT&E) Activity (MCOTEA) representatives for Marine Corps OT&Es and OT&Es performed by Fleet Marine Force Commanders and Technical Support Activities. This program also provides for OT&E of systems prior to procurement by the Marine Corps to include test planning, operational testing, and Independent Evaluation Report (IER) preparation.

FY 1988 Accomplishments: Retested Short Term Anti-Jam (STAJ) IOT&E, tested and published IERs for Digital Communications Terminal (DTC) and Position Locating Reporting System (PLRS). Wrote test plans for Vehicle Magnetic Signature Duplicator (VEMASID), Digital Wideband Transmission System (DWTS), and Portable Collective Protection System (PCPS). OT&R the PCPS.

FY 1989 Accomplishments: Wrote test plan for Digital Wideband Transmission System (DWTS). Conducted OT&E for the DWTS and joint testing of NAVSTAR GPS and MINTERM; completed testing on Portable Collection Protective System (PCPS) and published Independent Evaluation Reports (IERs).

FY 1990 Accomplishments: Participated in joint OT&E of NAVSTAR. Initiated plans for OT&E of Lightweight 155mm Howitzer.

FY 1991 Accomplishments: Wrote test plans for STINGER Night Sight, Anti-Personnel Obstacle Breaching System (APOBS), and Advanced Tactical Air Command Central (ATACC). Conducted Early Operational Assessment (EOA) of Advanced Amphibious Assault. Participated in multi-service test of Team Portable Communications Intelligence System and published an IER.

FY 1992 Accomplishments: Wrote test plans, conducted Initial Operational Test and Evaluation (IOT&E) and published Independent Evaluation Reports (IERs) for Heavy Equipment Trailer, Javelin, and Tray Ration Heating System. Wrote test plans and conducted Early Operational Assessment (EOA) of Advanced Amphibious Assault and published and EOA report. Participated in multi-service testing of C-17 aircraft loading. Wrote test plans for combined Developmental Test/Operational Test (DT/OT) of Light Armored Vehicle – Air Defense (LAV-AD).

FY 1993 Accomplishments: PE 0605873

$963 MCOTEA: Provided for organizational salaries, support and utilities.
$6 (C1699) UAV Short Range: Wrote test plans, participated in multi-service EOA, published EOA reports.
$15 (C2508) LSV: Wrote test plans, participated in EOA, and published EOA report.
$4 (C1969)Anti-personnel Obstacle Breaching System: Wrote test plans, conducted IOT&E and published IER.
$266 (C1929) ATACC: Wrote test plans, conducted IOT&E and published IER.
$3 (C0079) Tray Ration Heating System (TRHS): Completed IOT&E and published IER.
$62 (C1964) JAVELIN: Participated in multi-service IOT&E.
$173 (C) C-17 Aircraft loading: Participated in multi-service IOT&E.
$5 (C0048) AN/GRC-171: Participated in FDT&E and wrote IER.
$2,731 (C1960) LAV-AD:

FY 1994 Accomplishments: PE 0605873

$936 MCOTEA: Provided for organizational salaries, support and utilities.
$194 (C) C-17 Aircraft loading: Participated in multi-service IOT&E.
$147 (C1960) LAV-AD: Completed IOT&E and published IER.
$30 (C1555) LAV Day/Night Sight (LAV DNS) wrote test plans, conducted IOT&E and published IER.
$158 (C2122) TCOS: Wrote test plans, conducted IOT&E, and published IER
$2 (C0079) Tray Ration Heating System (TRHS): Completed IOT&E and published IER.
$274 (C1964) JAVELIN: Completed multi-service IOT&E and published IER.
$1,741

FY 1995 Accomplishments: PE 0605873

$1,086 MCOTEA: Provided for organizational salaries, support and utilities.
$ 221 (C) C-17 Aircraft loading: Participated in multi-service IOT&E and published IER.
$ 15 (C0076) MTVR: Wrote test plans, conducted OA, and published IER
$1,482 (C1960) LAV-AD: Conducted IOT&E and published IER.
$ 90 (C2122) TCOS: Conducted IOT&E and published IER.
$ 40 (C0062) Trojan Spirit II: Conducted IOT&E and published IER.
$ 3 (C901) 81mm Infrared Mortar Cartridge (81mm IMC): Conducted IOT&E and published IER.
$ 75 (C) Portable Automated Computerized Lightweight Expandable Search System (PACELESS: Conducted IOT&E.
$ 52 (C1961) MEWSS PIP: Conducted IOT&E and published IER.
$3,064

FY 1996 Accomplishments: PE 0605873

$903 MCOTEA: Provided for organizational salaries, support and utilities.
$ 27 (C) C-17 Aircraft loading: Participated in multi-service IOT&E and published IER.
$ 1 (C1901) Medium Machine Gun Tripod-Lightweight: Conducted IOT&E, and published IER
$135 (C2270) IDASC: Conducted IOT&E and published IER.
$ 15 (C082) Joint Service Lightweight Integrated Suit Technology: Conducted IOT&E and published IER.
$ 65 (C2273) AN/TPS-59: Conducted IOT&E and published IER.
$126 (C1297) Tactical Remote Sensor Program: Conducted IOT&E and published IER.
$ 6 (C) Drivers Propulsion Device: Conducted IOT&E and published IER.
$ 26 (C1901) Improved Recovery Vehicle: Conducted IOT&E and IER.
$ 77 (C1964) JAVELIN: Conducted IOT&E and published IER.
$ 92 (C1961) MEWSS PIP: Conducted IOT&E and published IER.
$ 50 (C0062) Secondary Imagery Dissemination System: Conducted IOT&E, EMD and published IER.
$146 (C1555) LAV MBIP: Conducted IOT&E and published IER.

$ 9 (C1901) Advanced Combat Vehicle Crewman's Helmet: Conducted IOT&E and published IER.
$162 (C0062) MEF IAS: Conducted IOT&E and published IER.
$135 (C1120) AVENGER: Conducted IOT&E and published IER.
$1,975

FY 1997 Accomplishments: PE 0605873
$1,353 MCOTEA: Provided for organizational salaries, support and utilities.
$ 35 (C2275) AN/TPS-5 Manpack VHF Satellite Communications Terminal: Conducted IOT&E and published IER.
$140 (C2112) LW 155: Conducted OTA and DTP for IOT&E.
$101 (C0076) MTVR: Conducted OTA and DTP for IOT&E.
$ 4 (C1901) Heavy Machine Gun Tripod Lightweight: Bill of Material Cost.
$229 (C2270) IDASC: Conduct IOT&E and publish IER.
$ 20 (C1901) Designated Marksman Rifle (DMR): Bill of Material Cost.
$338 (C0065) DTC: Conducted OTA and DTP for IOT&E.
$ 79 (C) Remote Landing Site Tower (RLST): Develop and publish DTP and test scenarios.
$ 54 (C1928) TERPES Upgrade: Conducted IOT&E and published IER.
$283 (C2113) SRAW: DTP and test scenarios for IOT&E.
$ 60 (C2085) AFATDS: Conducted IOT&E.
$ 68 (C1961) MEWSS PIP: Develop and publish the IOT&E.
$ 20 (C1901) Armored Vehicles Drivers Thermal Viewer (AVDTV): Conducted IOT&E.
$2,784

FY 1998 Accomplishments: PE 0605873
$763 MCOTEA: Provided for organizational salaries.
$505 MCOTEA: Provided for organizational support and utilities.
$263 (C2085) AFATDS: Conducted initial operational assessment and test.
$54 (C2273) TAOC: Conducted IOT&E associated with multiple system (JTIDS) integration.
$43 (C2272) Team Portable Collection System (TPCS): Developed detailed test plan and began first phase of IOT&E.
$25 (C0021) Advanced Assault Vehicle Reliability, Availability, and Maintainability Rebuild to Standard (AAV RAM/RS): Developed detail test plans and collection database.
$179 (C1961) MEWSS: Conducted MOT&E.
$250 (C0076) MTVR: Completed initial operational assessment and test; published assessment evaluation report.
$36 (C2276) TDN: Completed IER. Efforts concluded FY97 IOT&E.
$10 (C1901) Designated Marksman Rifle (DMR): Conducted IOT&E and published IER.
$2 (C1901) Advanced Driver Thermal Viewer (ADTV): Conducted IOT&E, which began in late FY 97.
$22 (C) Marine Load System/Family of Body Armor (MLS/FBA): Conducted initial operational assessments and tests.
$76 (C1928) TERPES Upgrade: Conducted IOT&E that incorporated JTIDS upgrade.
$2,228

FY 1999 Planned Program: PE 0605873

$827 MCOTEA: Provides for organizational salaries.

$375 MCOTEA: Provides for organizational support and utilities.

$425 (C2085) AFATDS: Conduct IOT&E and publish IER.

$134 (C1961) MEWSS: Conclude MOT&E and publish IER.

$49 (C) Technical Control and Analysis Center (TCAC PIP): Conduct IOT&E and publish IER.

$40 (C2272) Team Portable Collection System (TPCS): Conduct IOT&E and publish IER.

$40 (C2275) AN/PSC 5 Manpack VHF Satcom Terminal (AN/PSC5): Conduct FOT&E and publish IER.

$100 (C) Portion of extramural program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 USC 638.

$1,990)

FY 2000 Planned Program:

$1,047 MCOTEA: Provides for organizational salaries.

$780 MCOTEA: Provides for organizational support and utilities.

$280 (C0076) Medium Tactical Vehicle Replacement (MTVR): Conduct Initial Operational Assessment/Test.

$60 (C2330) Light NBC Reconnaissance System (LNBCRS): Conduct and publish DTP for IOT&E.

$2,167

Program Number C0062
Program Element 0206625M
Intelligence Analysis Systems (IAS) AN/TYQ-19
Subprojects
TROJAN Special Purpose Integrated Remote Intelligence Terminal (SPIRIT) II
Joint Surveillance Target Acquisition Radar System (JSTARS)
Joint Deployable Intelligence Support System (JDISS)
Joint Maritime Commanders Information System (JMCIS)
Secondary Imagery Dissemination system (SIDS)
Commanders Tactical Terminal (CTT)

APPN	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97
RDT&E	1,822	3,461	4,177	7,960	4,878	4,601	5,417	5,353	3,609	2,181
SIDS 474700 140726										
CTT 474700 140736										
TROJ 474700 140746										
JSTARS 474700 140756										
IAS 474700 141044										

Mission Description and Budget Item Justification: AN/TQY-19 block upgrade is a response to identified field requirements using an evolutionary strategy, to product improve the AN/TQY-19 IAC, a Marine Expeditionary Force (MEF) asset. The IAS is a vital component of the Marine Air Ground Intelligence System which is an integrated tactical data system. AN/TQY-19 block upgrade will extend automated intelligence to all lower levels of the MAGTF through the use of micro-computers on a LAN.

FY 1988 Accomplishments: Purchase necessary microcomputers and other hardware/software (HW/SW) for the prototype and began integration effort. Incorporated intelligence databases to insure inter/intraoperability with Navy and National Intelligence Systems/Databases.

FY 1989 Accomplishments: Conducted in-process review and trained FMF users on the prototype system. Shipped prototype system to the FMF for evaluation.

FY 1990 Accomplishments: Revised prototype. Evaluated prototype in II MEF exercise and in Navy/Marine Corps Intelligence Training Center field problem, and deployed with Operation Desert Shield. Developed software, evaluated candidate shelters, conducted communications analysis, and prepared RFP for intermediate IAS production hardware.

FY 1991 Accomplishments: Completed intermediate software development. Published a production RFP for echelons below the MEF (intermediate IAS) level. Began incorporation of tactical theater and national level databases and interfaced with other Marine Air Ground Intelligence Systems (MAGIS) components. Reduced cost by integrating TERPES software. Incorporated Defense Intelligence Agency's (DIA) Integrated Database System (IDS).
PMC $0 IAS

FY 1992 Accomplishments:

Completed Developmental Test of software
Identified prototype Secondary Imagery Dissemination Capability for evaluation.
PMC 474700 $4,021 Intelligence Support Equipment

FY 1993 Accomplishments:
$489 Incorporated Integrated Interoperability Database.
$440 Initialized interoperability with Naval Tactical Command System-Afloat and JDISS.
$105 Began transition to the Navy/marine Corps standard mapping tool kit.
$45 Conducted Environmental Testing on IAS hardware.
$55 Investigated engineering change proposals for the IAS suite.
$45 Developed adjustable plotter case.
$125 Developed Integrated Database Transaction Formulation (TF) translator.
$265 Tested and documented IAS version 2.0 software.
$175 Developed IAS training package and self-paced training guide.
$95 Developed and drafted communications employment guide.
$2,501 Milestone 0 ADM moved program into Phase 0. Two TROJAN SPIRIT II systems were purchased for the Marine Corps.
$197 Reviewed/Interpreted/analyzed/revised TROJAN SPIRIT II spare packages, training program and training documentation, technical manuals and technical drawing package.
$80 Performed required modifications to the Army's TROJAN Switching Center.
$4,617
PMC 474700 $41,570 Intelligence Support Equipment

FY 1994 Accomplishments:
$500 Developed and tested IAS version 2.1 and 2.2 software for the rugged IAS suites and MEF IAS.
$1,522 Completed MEF IAS design and conducted DT/OT.
$227 Tested and finalized IAS Suited communications employment guide.
$160 Incorporated Tactical Communications Interface Module drivers to upgrade communications interface capability.
$109 Integrated IAS workstation hardware and software.
$1,401 Upgraded the tow Trojan Sprit II systems from version 2.0 to 2.2 adding K-Band capability.
$6 Leased commercial satellite time to support Trojan Spirit OT.
$416 Developed Trojan Spirit programmatic and logistics documentation, technical and operator manuals, test plan and T&E master plan.
$250 Investigated ECP for IAS suite.
$120 Identified and validated requirements for version 3.0 software.
$110 Continued interoperability efforts with NTCS-A and Joint Maritime Commanders Information System (JMCIS). Begin transition of IAS.
$150 Developed JSTARS programmatic and logistics documentation support.
$4,971
PMC 474700 $17,997 Intelligence Support Equipment (TCAC and TPCE portions only)
$0 Intelligence Support Equipment (TROJAN SPIRIT only)
$7,277 Intelligence Support Equipment (IAS Mod only)
$0 Intelligence Support Equipment (CTT only)
$0 Intelligence Support Equipment (SIDS only)

FY 1995 Accomplishments:

FY 1996 Accomplishments:

FY 1997 Accomplishments:

Moved to Project Number C2270 Command Post Systems

Subprojects Secondary Imagery Dissemination system (SIDS) and Commanders Tactical Terminal (CTT) moved to Project Number C2272 Intelligence C2 Systems

Program Number C0065
Program Element 0206313
Marine Corps Unilateral TRITAC Test and Evaluation
Communications Control (COMM CON)
Subprojects
Digital Technical Control (DTC)
System Planning, Engineering, and Evaluation Device (SPEED)

APPN	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	
RDT&E	737	1,836	1,121	1,160	461	477	1,205	3,738	2,358		

Mission Description and Budget Item Justification: This project consists of three programs; (1) System Planning, Engineering, and Evaluation Device (SPEED), (2) Operational System Control Center (SYSCON), and (3) Technical Control Facility (TECHCON). These systems are required to deploy, operate, and restore the digital TRITAC communications networks. This project also supports TRITAC testing.

FY 1988 Accomplishments: Fielded prototype SPEED to FMF. Completed TECHCON requirement assessment.

FY 1989 Accomplishments: Completed "rehosting" of prototype SPEED software onto ruggedized microcomputer and conducted Development test. Completed fabrication and field prototype, portable, TECHCONS.

FY 1990 Accomplishments: Finalized core capabilities and initiated P3I program. Operational testing was successfully completed. The required operational capacity was finalized and approved. A production decision for SPEED was approved. The core SPEED was placed under configuration control. Two P3IP modules were completed and tested in support of SINCGARS and PLRS. Three prototypes Portable TECHON systems were delivered for filed testing. Four prototypes SPEED's were deployed to Operation Desert Shield.

FY 1991 Accomplishments: SPEED acquired more capabilities for tactical automated switch network planning, multi-channel radio frequency deconfliction, communications equipment interconnection, compatibility analysis, automated Communications Electronics Operating Instructions (CEOI), co-site analysis, communications satellite planning, communications annex generation, and a plans database.
PMC $0 SPEED

FY 1992 Accomplishments: Incorporated the capability to perform Switched Network Automated Planning (SNAP) for the AN/TTC-42 and SB-3865 switches into the SPEED software suite. Three stand-alone DOS based software modules were added to enhance the SPEED software suite. These modules provide the capability to generate; naval messages (MTF Editor), automated Communications-Electronics Operating Instructions and SINGARS hopsets/loadsets through the Revised Battlefield Electronic Communications-Electronic Instruction System (RBECS); and access the standard Marine Corps bundled software package (Enable 4.5)
PMC $0 SPEED

FY 1993 Accomplishments:
$147 Developed a Satellite Planning module and incorporated in software release.

$232 Developed a Position Location Reporting System manager module integrated into the SPEED software suite.
$100 Enhanced multi-channel radio frequency planning and profiling. The software suite is migrating into the Windows environment and graphical user interface to ease operation of the system by providing the same "look and feel' for all the applications.
$479
PMC 417700 $0 Digital Tech Control

FY 1994 Accomplishments:
$297 SPEED: Developed "Grouping/Ungrouping" module to aid the communications planner in moving/placing communications assets in the area of operation to better assess system viability. Automated Radio Guard Chart to better plan and control radio networks.
$295 SPEED: Developed an enhanced High Frequency (HF) communications planner to better aid the communicator in planning and profiling HF radio communications, software integration.
$150 DTC: Documented, analyzed, and prepared system specification and SOW for Milestone I/II.
$742
PMC 484000 $0 Digital Tech Control

FY 1995 Accomplishments:

FY 1996 Accomplishments:

FY 1997 Accomplishments:
Subproject System Planning, Engineering, and Evaluation Device (SPEED) moved to Program Number C2270 Command Post Systems

Subproject Digital Technical Control (DTC) moved to Program Number C2276 Communications Switching and Control Systems

Program Number C1901
Program Element 0206623M
Marine Corps Ground Weaponry Product Improvement Program

APPN	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
RDT&E	21,976	8,323	3,352	2,206	2,849	2,668	3,661	1,650	1,381	1,414	6,251	7,462
PMC												

Mission Description and Budget Item Justification: This project develops joint and Marine Corps unique improvements to infantry weapons/artillery technology; Marine Corps unique Amphibious Armor Systems (AAS) improvements for the M1A1 Main Battle Tank and support systems; and monitors national/international weapons deployments.

Mission Description and Budget Item Justification:
This Project develops joint and Marine Corps unique improvements to infantry weapons and artillery technology, USMC unique Amphibious Armor Systems (AAS), improvements for the M1A1 Main Battle Tank and support systems, USMC Family of Small Craft, Night Vision Equipment and monitors national and international weapons developments.

FY 1988 Accomplishments: Participated in M198/M109 Battery Computer System (BUCS) software PIP and joint Service Small Arms Program (JSSAP).

PMC	RCN	021113	$0	5.56 Squad Automatic
PMC	RCN	021173	$0	MK19 Machine Gun
PMC	RCN	020453	$0	Machine Gun .50 Caliber

FY 1989 Accomplishments: Completed .50 caliber Sabot Light Armor Penetrator (SLAP)/Tracer Type classification. Continued development of muzzle launched ordnance/bullet trap rifle grenade (MLO/BTRG). Procured combat shotguns and began follow-on operational tests.

PMC	RCN	021113	$1,800	5.56 Squad Automatic
PMC	RCN	021173	$5,000	MK19 Machine Gun
PMC	RCN	020453	$0	Machine Gun .50 Caliber
PMC			$0	Thermal Imaging Equipment

FY 1990 Accomplishments: Completed Root Cause Analysis of caliber .50 SLAP ball and tracer rounds and obtained approval for full rate production. Completed initial phases of Bullet Trap Rifle Grenade engineering and operational testing. Continued development of combat shotguns, ammunition for shotgun and pistol, Thermal Imaging System (TIS) and Close Quarters Battle (CQB) weapon. Initiated improved heavy machine Gun Mount, sling adapter kit, mod kits and monitored infantry mortars. Evaluated Lightweight 155mm Howitzer (LW155) technology. Continued 25mm advanced multi-purpose (AMP) ammo program. Initiated special application sniper rifle program.

PMC	RCN	021113	$0	M-249 Machine Gun MD
PMC	RCN	021173	$0	MK19 Machine Gun

FY 1991 Accomplishments: Initiated special application sniper rifle program. Completed M16 Tracer, ammunition programs and modification kits for CQB weapon. Continued M249 Squad Automatic Weapon (SAW), M60E3 machine gun, joint TIS program, and ammunition programs for frangible light armor penetrator rounds. Continued 25mm advanced mult-purpose ammunition (AMP) effort. Initiated .50 caliber anti-material/special applications scooped rifle (SASR).

PMC RCN 021173 $16,936 MK19 Machine Gun
PMC $0 Modification Kits (Artillery & Other)

FY 1992 Accomplishments: Completed special Applications Sniper Rifle. Initiated 7.62mm Designated Marksman Weapons (DMW) and Lightweight Marine Laser Designator Rangefinder (LMLDR) program. Continued Frangible Ammunition improvements to M249 Squad Automatic Weapon, M240 Machine Gun, Improved Heavy machine gun mount, Joint Thermal Imaging System program, Joint 25mm advanced Multi-Purpose (AMP) ammunition program, and Close Quarter Battle Weapon (CQBW)/ammunition development. Evaluated artillery technology. AAS: Continued Forward Observer/Forward Air Controller (FO/FAC) radio suite integration.

PMC $5,185
PMC $51
PMC $1,500

FY 1993 Accomplishments:

$1,000 Continued modification kits for Infantry Weapons, 7.62 mm DMR program, formerly, Sniper Team Support Weapon, Thermal Sight Program, and concept evaluation of Frangible Ammunition and LMLDR.

$684 Evaluated artillery technology including software requirements for Back Up Computer System (BUCS) and users trial for Gun Laying and Positioning System (GLPS).

$61 Conducted technical risk assessment of the Meteorological Measuring Set.

$988 Developed and tested joint 25mm Multi-purpose ammunition. Completed M1A1 FO/FAC integration.

$

PMC 206300 $16,413 Modification Kits (Tracked Vehicles)
PMC 220900 $12,861 Modification Kits (Artillery and Other)

FY 1994 Accomplishments:

Funding from Project Number C1763 transferred to this Program in FY 1994.

$534 Continued 5.56mm/9mm Frangible Ammunition program and provided/conducted Marine Corps unique activities associated with joint service rifle/machine gun PIP.

$1,446 Conducted contract solicitation for the Lightweight Laser Designator Rangefinder (LLDR) industry study. Terminated the LLDR program. Performed Meteorological Measuring Set Initial OT&E and Amphibious Capability Test (ACT). Administered/Tracked GLPS efforts. GLPS is an Army-lead program. Conducted BUCS market analysis, prototype buys, beta software conversion and validated testing. Administered/Tracked Metrology Hydrogen Generator (MHG) efforts. MHG is an Army-lead program. Continued artillery technology evaluation.

$53 Joint participation with Army for Weapons Safety Certification/Shipboard modifications for Multiple Launch Rocket System M77 ammunition.

$710 Terminated joint 25mm multi-purpose ammunition program. Continued Amphibious Armor System upgrade of tank retriever to M88A2.

$

PMC 206300 $963 Modification Kits (Tracked Vehicles)
PMC 209900 $0 M188A2 Improved Recovery Vehicle
PMC 220900 $3,903 Modification Kits (Artillery and Other)

FY 1995 Accomplishments:
$811 Continued artillery technology evaluations and validation for BUCS. Initiated effort to participated with the Army AN/TPQ-36 (Firefinder Radar Upgrade) program. Continued joint participation in investigations to improve field survey equipment and M198 Howitzer improvements for sustatinment.
$95 Continued joint AAS modifications for Armament Enhancement Initiative (AEI), Self Cleaning Air Filter (SCAF) and CO2 modifications.
$802 Continued Marine Corps unique activities associated with joint service rifle/machine gun and night vision PIP.
$1,708

PMC 206300	$13,386	Modification Kits (Tracked Vehicles)
PMC 209900	$0	M188A2 IRV
PMC 220900	$532	Modification Kits (Artillery and Other)

FY 1996 Accomplishments:
$656 Continued joint participation and Marine Corps unique activities for evaluation of safety, technology and lethality improvements for Marine Corps infantry/reconnaissance weapons and night vision devices. Pursued improvements in accuracy, reliability, and maintainability of the current service rifle, special operations and crew served weapons.
$599 Continued joint evaluation and Marine corps activities for modifications of safety, software and technology improvements for artillery and fire support systems. These activities include a product improvement to the Firefinder AN/PQ-36 radar, joint participation in the Meteorological Measuring Set (MMS), and evaluation of NDI hydrogen generators. Participated jointly with the Army in investigations to improve field survey equipment and M198 Howitzer improvements for sustainment.
$183 Continued joint and Marine Corps unique evaluation of modifications for amphibious armor. This included improvements to the M88 Improved Recovery Vehicle (IRV), the SCAF, wire race ring integration study (the turret turns on a wire race ring instead of bearings), Armament Enhancement Initiative (AEI), Halon replacement, Armored Vehicle Launched Bridge (AVLB) upgrade technology improvements to the M1A1 tank, M88 IRV and the AVLB.
$1,438

PMC	206300	$16,772	Modification Kits (Tracked Vehicles)
PMC	220900	$109	Modification Kits (Artillery and other)
PMC	493000	$0	Near Infrared Pointer (ILP)
PMC	473300	$0	Mortar Ballistic Computer (MBC)
PMC	473300	$0	Target Location Designation and Hand-off System (TLDHS)
PMC	493000	$0	Thermal Weapon Sight (TWS)
PMC	219700	$0	Meteorological Hydrogen Generator
PMC	219800	$0	Gun Laying Positioning System

FY 1997 Accomplishments:
$611 Infantry Mods: Continued joint participation and Marine Corps unique activities for evaluation of safety, lethality, and technology improvements for Marine Corps infantry/reconnaissance weapons and night vision devices. Pursued improvements in accuracy, reliability, and maintainability of current service rifle, special operations weapons, and crew served weapons. Began development and testing for the Infra Red Laser Pointer (IRLP) and continued development and program documentation for the .50 caliber Heavy Machine Gun Upgrade and the .50 caliber blank firing adapter. Pursue improvements in accuracy, reliability, and maintainability of the current family of small arms, crew served weapons, and special operations weapons.
$601 Fire Support Mods: Continued joint participation for artillery and fire support improvements. Continued M198 Howitzer and Modular Universal Laser Equipment (MULE) sustainment, alternatives for Hydrogen Generators, Position Azimuth Determination System (PADS) replacement and filed survey improvements, development of the Met Measuring System (MMS), and development of the AN/TPQ-36 radar.

$125 Armor Mods: Continued joint evaluation of modifications for amphibious armor including Gen II Fire Control Systems, carbon dioxide fire control systems, Battlefield Combat Identification System (BCIS), and others

$84 Small Craft: Fault analysis for future modifications to Marine Corps riverine assault craft.

$1,421

PMC	206300	$319	Modification Kits (Tracked Vehicles)
PMC	220900	$1,663	Modification Kits (Artillery and other)
PMC	493000	$0	Near Infrared Pointer (ILP)
PMC	473300	$0	Mortar Ballistic Computer (MBC)
PMC	473300	$0	Target Location Designation and Hand-off System (TLDHS)
PMC	493000	$0	Thermal Weapon Sight (TWS)
PMC	219700	$0	Meteorological Hydrogen Generator
PMC	219800	$0	Gun Laying Positioning System (GLIPS)

FY 1998 Accomplishments:

$229 Armored Vehicle Driver's Viewer Enhancer (AVDVE): Continued integrated logistics documentation and testing for the Light Armored Vehicle (LAV) /Assault Amphibious Vehicle (AAV) procurement of the AVDVE for all Marine Corps vehicles.

$160 M1A1 Armor Mods: Continued joint evaluation of modifications of amphibious armor including Component Enhancements, Advanced Fire Control Systems, survivability systems, M88 Tank Retriever and AVLB upgrades, combat identification and others.

$1,795 Target Location Designator Hand-off System (TLDHS): Continued participation in Joint-Service, U.S. Army-led EMD development of the Lightweight Laser Designator Rangefinder (LLDR) to include system design, subsystem fabrication and integration and user evaluations. Continued to define, design and develop TLDHS-specific software application and integration with the Marine Corps Data Automated Communication Terminal (DACT) and Rugged Hand-held Computer (RHC).

$469 Fire Support Mods: Continued joint participation in artillery and fire support improvement projects. Specifically, continued joint sustainment of the M198 Howitzer, to include research, development and field user evaluations of the Hydraulic Assist Kit Package and Elimination of Radioactive Light Sources (ERLS) collimeter. Continued unilateral development of USMC-unique ballistics software for the Mortar Ballistic Computer (MBC) to include initial software definition and design. Initiated Marine Corps participation in Joint-Service, U.S. Army-led development of Firefinder Radar Position Analysis System software. Monitored U.S. Army development and executed USMC-unique cost analyses of the Gun Laying and Positioning System (GLPS) and Family of Artillery Munitions.

$352 Mortar Ballistic Computer (MBC): Continued unilateral development of USMC-unique ballistics software for the Mortar Ballistic Computer.

$595 Infantry Mods: Continued joint participation and Marine Corps unique activities for evaluation of safety, lethality, and technology improvements for Marine Corps infantry/reconnaissance individual weapons, crew served weapons, and night vision devices. Pursue improvements in accuracy, reliability, and maintainability of the current service rifle, special operations weapons, and crew served weapons.

$268 Thermal Weapons Sight (TWS)[AN/PAS-13]: Continued joint participation and Marine Corps unique activities for the testing and evaluation of TWS.

$78 Family of Small Craft: Provided Fault Analysis and Fault Isolation (FAFI) for the Riverine Assault Craft (RAC) and the Rigid Raiding Craft (RRC) and associated equipment at Marine Corps Programs Department (MCPD), Fallbrook, CA.

$2,105 AN/VVR-1 Laser Warning Receiver: Developed an installation kit for the AN/VVR-1 laser warning receiver and an integrated target Identification capability for the M1A1 tank.

$200 Marine Corps Portion of Joint Ammunition Management Standard System.

$2,651

PMC	206300	$4,484	Modification Kits (Tracked Vehicles)
PMC	210500	$1,943	Items <$5 Million (Tracked Vehicles)
PMC	220900	$3,712	Modification Kits (Artillery and other)
PMC	221000	$1,653	Items <$5 Million (Other)

PMC	468300	$160	AN/TPQ-36 Firefinder Radar Upgrades
PMC	493000	$6,842	Night Vision Equipment
PMC	473300	$0	Fire Support Systems
PMC	643400	$0	Amphibious Raid Equipment
PMC	223400	$0	Modular Weapons Systems
PMC	222000	$0	Weapons and Combat Vehicles
PMC	462000	$0	Items <$5 Million (Communications and Electronics)
PMC	667000	$0	Items < $2 Million

FY 1999 Planned Program:

$236 Armored Vehicle Driver's Viewer Enhancer (AVDVE): Complete integrated logistics documentation and testing for the LAV/AAV procurement of the Armored Vehicle Driver's Viewer Enhancer for all USMC vehicles.

$253 M1A1 Armor Mods: Continue joint evaluation of modifications of amphibious armor including Component Enhancements, Advanced Fire Control Systems, survivability systems, M88 and AVLB upgrades, combat identification and others.

$3,351 Target Location Designator Hand-off System (TLDHS): Continue participation in the joint-Service, U.S. Army-led EMD development of the LLDR hardware and software, and continue to develop TLDHS-specific software application. Continue integration of LLDR with the DACT, C2PC, and the Marine Air-Ground Task Force (MAGTF) C4I architecture. Participate in the LLDR IOT&E and demonstrate limited interoperability with artillery agencies (AFATDS) and close-air-support platforms (F-18 and AV-8B).

$861 Fire Support Mods: Continue joint participation in artillery and fire support improvement projects. Specifically, continue joint sustainment of the M198 Howitzer, to include development of an improved Suspension Kit and user evaluations of the Elimination of Radioactive Light Sources (ERLS) collimeter. Continue joint software modeling, design and field user evaluations of the Firefinder Radar Position Analysis System. Conduct technical, operational and cost analysis of Family of Artillery Munitions. Provide support to the Marine Corps Warfighting Lab for the development, evaluation and rapid transition of fire support initiatives.

$75 Mortar Ballistic Computer (MBC): Continue unilateral development of USMC-unique ballistics software for the Mortar Ballistic Computer.

$600 Mortar Ballistic Computer (MBC): Forward Financed efforts within this project for FY00 to continue EMD phase.

$1,141 Infantry Wpns Mods: Continued joint participation and Marine Corps unique activities for evaluation of safety, lethality, and technology improvements for Marine Corps infantry/reconnaissance individual and crew served weapons. Pursue solutions to integrate weapons systems with existing and planned night vision and sighting technologies including revisions of mounts and interfaces. Begin weapon system ingetration into the Integrated Infantry Combat System (IICS) to enhance the efficiency, effectiveness and safety of the Combat System.

$613 Thermal Weapons Sight (TWS)[AN/PAS-13]: Joint participation and Marine Corps unique activities for the testing and evaluation of TWS.

$91 Family of Small Craft: Provide Fault Analysis and Fault Isolation (FAFI) for the Riverine Assault Craft (RAC) and the Rigid Raiding Craft (RRC) and associated equipment at MCPD, Fallbrook. Engineering support for the Raw Water Cooling System (RWCS) for the RAC.

$61 Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

$7,462

PMC	206300	$7,708	Modification Kits (Tracked Vehicles)
PMC	210500	$97	Items <$5 Million (Tracked Vehicles)
PMC	220900	$2,803	Modification Kits (Artillery and other)
PMC	221000	$105	Items <$5 Million (Other)
PMC	468300	$155	AN/TPQ-36 Firefinder Radar Upgrades
PMC	493000	$33,586	Night Vision Equipment

PMC	473300	$0	Fire Support Systems
PMC	643400	$3,714	Amphibious Raid Equipment
PMC	223400	$0	Modular Weapons Systems
PMC	222000	$0	Weapons and Combat Vehicles
PMC	462000	$0	Items <$5 Million (Communications and Electronics)
PMC	667000	$0	Items < $2 Million

FY 2000 Planned Program:

$261 M1A1 Armor Mods: Continue joint evaluation of modifications of amphibious armor including Component Enhancements, Advanced Fire Control Systems, survivability systems, M88 and AVLB upgrades, combat identification and others.

$1,903 Target Location Designator Hand-off System (TLDHS): Complete Joint-service, U.S. Army-led EMD development and IOT&E of the LLDR. Complete initial systems integration between the LLDR and the DACT/Command & Control Personal Computer. Continue incremental refinement, coding, evaluation and Independent Verification & Validation (IV&V) of the TLDHS-specific software application to ensure interoperability with emerging Marine Corps tactical C4I architecture and with other fire support platforms and agencies. Conduct FOT&E of artillery (Variable Message Format/Package 11) fire support functionality.

$1,053 Fire Support Mods: Continue joint participation in artillery and fire support improvement projects. Specifically, continue joint sustainment of the M198 Howitzer. Conduct prelimnary technical, operational and cost analyses of alternative technologies to replace the AN/GVS-5 Laser Infared Observation Set. Provide support to the Marine Corps Warfighting Lab for the development, evaluation and rapid transition of fire support initiatives.

$1,271 Infantry Wpns Mods: Continued joint participation and Marine Corps unique activities for evaluation of safety, lethality, and technology improvements for Marine Corps infantry/reconnaissance individual and crew served weapons. Pursue solutions to integrate weapons systems with existing and planned night vision and sighting technologies including revisions of mounts and interfaces. Begin weapon system integration into the Integrated Infantry Combat System (IICS) to enhance the efficiency, effectiveness and safety of the Combat System.

$112 Thermal Weapons Sight (TWS)[AN/PAS-13]: Continued joint participation and Marine Corps unique activities for testing of the TWS.

$623 Family of Small Craft: Provide Fault Analysis and Fault Isolation (FAFI) for the Riverine Assault Craft (RAC) and the Rigid Raiding Craft (RRC) and associated equipment at MCPD, Fallbrook, CA. Engineering support for the Raw Water Cooling System (RWCS) for the RAC.

$450 Night Vision Mod Line: Continue joint participation and Marine Corps unique activities for evaluation of safety, lethality and technology improvements for Marine Corps Night Vision Devices. Provides for In Service Engineering Activity (ISEA) at NSWC, Crane, IN. Participate with ARMY PM-Night Vision at Ft Belvoir, VA on new enhancements for I2. Travel/TAD to support enhanced systems development and review of tests.

$265 Begin in-depth requirements analysis to establish the types and amounts of future ammunition required by the USMC. Establish active monitoring of US Army artillery ammunition development programs in order to leverage off and influence Army munitions R&D effort. Allow Marine Corps Operational Test and Evaluation Activity participation in all tests to collect/analyze data to support a procurement decision.

$6,000 AVLB Upgrade: Develop NDI integration design for mobility and hydraulic improvements to Armored Vehicle Launched Bridge. Begin fabrication of two upgraded Engineering Development Models (EDMs).

$7,200 Improved Recovery Vehicle: Initiate preliminary design of powertrain and weight improvements to M-88 Recovery Vehicle to include NDI alternatives.

$5,150 M1A1 Firepower Enhancements: Conduct trade studies to determine most cost effective upgrades to the tank fire control system. Initiate preliminary design of integrated NDI package to include improved thermal sight, automatic target tracker and north-finding/far target location capability. Begin fabrication/testing of prototype integrated system.

$200 Family of Improved Lightweight Mortars: In conjunction with Program manager for Mortars, conduct concept exploration initiatives to determine the feasibility of alternative concepts for the Pointing Device (PD) for the Mortar Fire Control System (Light) (MFCS). The PD provides precise deflection, elevation, and Global Positioning System interface for the MFCS. Will down-select to no more than two alternatives for further development.
$24,488

PMC	206300	$22,853	Modification Kits (Tracked Vehicles)
PMC	210500	$0	Items <$5 Million (Tracked Vehicles)
PMC	220900	$3,288	Modification Kits (Artillery and other)
PMC	221000	$0	Items <$5 Million (Other)
PMC	468300	$0	AN/TPQ-36 Firefinder Radar Upgrades
PMC	493000	$9,032	Night Vision Equipment
PMC	473300	$0	Fire Support Systems
PMC	643400	$0	Amphibious Raid Equipment
PMC	223400	$0	Modular Weapons Systems
PMC	222000	$323	Weapons and Combat Vehicles
PMC	462000	$10,303	Items <$5 Million (Communications and Electronics)
PMC	667000	$9,102	Items < $2 Million

Program Number C1929
Program Element 0604719M
Advanced Tactical Air Command Central (ATACC)

APPN	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97
RDT&E	2,358	9,741	19,587	3,981	7,011	0	8,127	2,675	6,509	
PMC										

Mission Description and Budget Item Justification: This project will integrate hardware and software into a replacement system, capable of overcoming the current operational deficiencies of the AN/TQY-1 Tactical Air Command Central (TACC), and the AN/TYQ-3A Tactical Data Communications Central. The ADA computer language program will automate and enhance the now manual decision support/mission planning functions of the TACC. Additionally, the ATACC will provide increased interoperability through the integration of Joint Tactical Information distribution system/Tactical Air Data Link-Joint (JTIDS/TADIL-J), and automate Joint Interoperability of Tactical Communications Systems (JINTACCS) messages receipt and origination.

FY 1988 Accomplishments: Completed evaluation of proposal from industry. Complete source selection process and evaluation of Best and Final offers.

FY 1989 Accomplishments: Awarded single, competitive, fixed price R&D contract with fixed price production options. Ordered long-lead hardware and commenced rapid prototyping phase. Completed System Requirements Review.

FY 1990 Accomplishments: Completed System Design and Preliminary Design Review. Critical Design Review and commencement of software code and unit testing began. Completed prototype hardware integration.

FY 1991 Accomplishments: **N/A**

FY 1992 Accomplishments: Completed formal qualification testing, system functional qualification testing, and filed installation and acceptance testing.

FY 1993 Accomplishments: Funded in PE 060570873M, C0033.
PMC 459700 $6,751

FY 1994 Accomplishments:
$720 Commenced development of shelter reconfiguration necessary due to the results of OT&E (Phase I).
$2,663 Commenced development of Performance Enhancements due to new ORD>
$1,489 Commneced extensive evaluation of Air Force contingency Theater Automated Planning System (CTAPS) for use in ATACC (Phase I).
$904 Provided updates and enhancements to ATACC software to address OT&E results and enhance functionality required by the new ATACC ORD.
$710 Management and contract support services (Phase I and II).
$
PMC 459700 $8,319

FY 1995 Accomplishments:

FY 1996 Accomplishments:

FY 1997 Accomplishments:

Moved to Program Number C2270 Command Post Systems

Program Number C2085
Program Element 0604719M
Advanced Field Artillery Tactical Data Systems (AFATDS)

APPN	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97
RDT&E			2,412	4,256	8,603	7,535	8,754	2,911	1,533	
PMC										

Mission Description and Budget Item Justification: This program was formerly titled FIREFLEX. AFATDS will consist of the digital fire support Command and Control automated software, fielded on Marine Corps common software. AFATDS will automate for the marine commander the integration and coordination of supporting arms. AFATDS development is in three versions, each adding new capabilities and refining existing capabilities. The Marine Corps plans to filed version 2 baselined on the Lightweight Computer Unit.

FY 1988 Accomplishments: **N/A**

FY 1989 Accomplishments: Funded in PE 0206625M. Planned and conducted FMF appraisals/demonstrations of existing fire support command and control equipment: began COEA on identified appraisal/demonstration fire support command and control equipment; completed development of modified software for USMC unique fire support requirements to the currently fielded Army Fire Support Team Digital Message Device (FIST-DMD) software. Signed a Memorandum of Agreement with the Army to participate in the AFATDS program.

FY 1990 Accomplishments: Established FMF user testbed with fire support C2 rapid prototypes. Conducted demonstration of AFATDS concept evaluation hardware and software with 11th Marines, Camp Pendleton, CA. The AFATDS full scale engineering development (FSED) contract was awarded in April. Established the Requirements Definition working Group (RDWG) between Army TRADOC System Manager (TSM), Fort Sill, OK and MCCDC, Quantico, VA.
PMC $0 MAFATDS

FY 1991 Accomplishments: Continued Advanced Field Artillery Tactical Data System (AFATDS) version 1 software development. Completed SDR, SSR, and PDR. Utilized FMF testbed to evaluate automated, digital C2 equipment, doctrine and procedures.

FY 1992 Accomplishments: Completed software preliminary design review and software critical design review. Negotiated AFATDS version 2 contract option.
PMC $0 MAFATDS

FY 1993 Accomplishments:
$6,091 Completed code and integration of version 1 software.
$ 390 Conducted version 1 Formal Qualification and system software test.
$1,171 Currently developing AFATDS version 2 software.
$7,652
PMC 461100 $ AFATDS

FY 1994 Accomplishments:
$1,157 Began alternate communication architecture research and integration of IFSAS with the MAGTF Technical Net Server (TNS).
$3,469 Completed version 1 software code and conducted DT&E/Experimentation of version 1 software.
$4,217 Started PDR of version 2 software.
$8,843
PMC 461100 $9,594 AFATDS

FY 1995 Accomplishments:

FY 1996 Accomplishments:

FY 1997 Accomplishments:

Moved to Program Number C2270 Command Post Systems

Program Number C2102
Program Element 0206626M
Improved Direct Air Support Center (IDASC)

APPN	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97
RDT&E				1,188	923	1,247	2,605	870	
PMC									

Mission Description and Budget Item Justification: The current IDASC will be upgraded to include physical/functional enhancements and a digital data interface to associated command and control systems. Improvements include database manipulation. Preliminary designs for physical and functional enhancements were approved and prototype hardware developed. Work will continue on review and modifications of off-the-shelf software and selection of prototype hardware, as well as, determining software baselines and prioritizing system upgrades.

FY 1990 Accomplishments: NDI software packages have been under review. A modification effort to a typical defense Mapping Agency (DMA) mapping application software package is ongoing at NAVELEX, Vallejo, CA. Candidate hardware has been acquired and a prototype system demonstrated. Continue design and prototype of physical upgrades.

FY 1991 Accomplishments: Continued software modifications. Built prototype and conducted suitability testing.
PMC $0 IDASC

FY 1992 Accomplishments: Downsized IDASC baseline and incorporated previous hardware and software upgrades into highly mobile Standard Integrated Command Post (SICP) shelters on high mobility multi-purpose wheeled vehicles (HMMWVs).
PMC $3,264 IDASC

FY 1993 Accomplishments:

FY 1994 Accomplishments:
$451 Initiated selective automation development (Phase I).
$200 Incorporated new message standards to improve interoperability with TACC and external C2 agencies.
$643 Initiated tailoring of IDASC unique software applications development towards JMCIS core capabilities and interfaces and upgraded for digital voice and data communication capability.
$1,294
PMC 461000 $2,767 Marine Tactical Command and Control System (IDASC portion only)
OMMC $0

FY 1995 Accomplishments:

FY 1996 Accomplishments:

FY 1997 Accomplishments:

Moved to Program Number C2270 Command Post Systems

Program Number C2122
Program Element 0206626M
Tactical Combat Operations (TCO)

APPN	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97
RDT&E				5,711	2,539	5,794	2,418	819	
PMC									

Mission Description and Budget Item Justification: The TCO system will serve at the operations component to the Marine Tactical Command and Control System (MTACCS). TCO will use microcomputers to provide commanders the automation to receive, fuse, select, and display information from many sources, and disseminate selected information throughout the battlefield. Additional TCO attributes include: Automated message processing, mission planning, development and dissemination of operations orders and overlays, display of tactical control measures, and interfaces with local and wide are networks. The Marine Integrated Personnel System/Marine Integrated Logistics System (MIPS/MILOGS) is one of the functional areas which constitute the MTACCS. MIPS/MILOGS is not a "system", but a conceptual association of a personnel and logistic status decision support system for a number of stand-alone prototype and fielded personnel and logistic systems. It will fully automate current combats service support tasks by extracting personnel/logistics data from existing Class I systems and providing input to TCO.

FY 1990 Accomplishments: Defined TCO system engineering and acquisition strategy to deploy a baseline TCO system which provides for the integration of associated MTACCS systems such as Marine Air Command and Control Systems (MACCS), INTEL, and MIPS/MILOGS.
PMC $0 TCO

FY 1991 Accomplishments: Defined TCO systems engineering and acquisition strategy to deploy a baseline TCO system which provides for the integration of associated MTACCS systems such as MACCS, IAS, and MIPS/MILOGS.

FY 1992 Accomplishments:

Conducted Field Demonstration System (FDS)-1 with 7th MEB.
Refined system requirements.
Completed initial hardware and training analysis.
Performed evaluation of alternative, candidate systems.
Refined detail program documentation for pending Milestone I review.
Participated in a joint effort with the Army Combat Service Support Control System (CSSCS) program.
$

FY 1993 Accomplishments:

FY 1994 Accomplishments:

$4,131	Conducted final DT/Initial OT.
$1,147	Conducted TCO OT&E and implement TCO training plan.
$560	Received LRIP to procure 32 workstations for Marine Corps schools.
$22	Validated TCO hardware requirements.

$5,860

PMC	461300	$0
OMMC		$57
OMMCR		$0

FY 1995 Accomplishments:

FY 1996 Accomplishments:

FY 1997 Accomplishments:

Moved to Program Number C2270 Command Post Systems

Project Number C2270
Program Element 0206313
Combat Post Systems

RDT&E

	FY 96	FY 97	FY 98	FY 99	Total	
AFATDS						
ATACC						
IAS						
IDASC						
EICOC						
MAGTF C4I Baseline						
TCO		660				
Total	0	9,757	6,025	10,218		

PROCUREMENT

	FY 96	FY 97	FY 98	FY 99	Total	
AFATDS						
ATACC						
IAS						
IDASC						
EICOC						
MAGTF C4I						
TCO						
Total						

OMMC

	FY 96	FY 97	FY 98	FY 99	Total	
AFATDS						
ATACC						
IAS						
IDASC						
EICOC						
MAGTF C4I Baseline						
TCO						
Total						

Mission Description and Budget Item Justification: Systems assigned to this project are to be used by commanders and their staffs to process, fuse, and tailor information to assist decision-making and enhance situational awareness. They will integrate and share information from sources both internal and external to the Marine Air-Ground Task Force (MAGTF) to provide a shared understanding of the battlespace.

1. Decision support integrates information from the seven Command and Control (C2) functional areas and the support function. The information is tailored to support the users' specific needs. As a result of the MAGTF C4I Baseline subproject, an integrated migration strategy is

being incorporated into the MAGTF software baseline, which will be common across and used, by all MAGTF C4I programs.

2. The Tactical Command Operations (TCO) will provide systems to the command post, which support Maneuver C2. Maneuver C2 is the executive layer of decision support that pulls and fuses information from other functional areas.
3. The Intelligence Analysis Systems (IAS) supports the employment of reconnaissance, surveillance, and target acquisition resources and the timely planning and processing of all-source intelligence; it ensures that tactical intelligence is tailored to meet specific mission requirements. A Marine Expeditionary Force (MEF) IAS variant will also process signal intelligence.
4. Advanced Field Artillery Tactical Data Systems (AFATDS) will consist of fire support command and control software fielded on Marine Corps common hardware. AFATDS will provide the MAGTF with an automated ability to rapidly integrate all supporting arm assets into maneuver plans.
5. The Advanced Tactical Air Command Center (ATACC) functions as the operational command post of the MAGTF ACE. It provides automated assistance for planning and executing tactical air operations, and provides voice and data interface with joint and combined Air C2 agencies. The Phase I ATACC was fielded 1st Qtr FY96. The Improved Direct Air Support Center (IDASC) links information and systems needed to conduct Air Operations C2 with Maneuver C2 of the ground combat element of the MAGTF.
6. The Expeditionary Integrated Combat Operations Center (EICOC)/Unit Operations Center (UOC) project develops and transitions two Command and Control Imperative ATDs (the Expeditionary Integrated Combat Operations Center (EICOC) and the Joint Tactical Communications ((JT COMMs) ATDs) into various Marine Corps and Joint Engineering and Manufacturing Development (E&MD) efforts. EICOC development efforts focus on: Cognitive Task Analysis (CTA); enhanced ergonomic physical design; evaluation of advanced multimedia hardware; integration and networking with advanced development communication systems; and advanced software development to support systems integration and advanced battlefield visualization concepts. EICOC developments are tailored to support transition of software and hardware developments as PIPs to the established MAGTF C4I baseline. EICOC is the interim name for the Unit Ops Center (UOC). The UOC name will replace the EICOC name starting with FY00. Unit Operations Center (UOC) will provide a facility and components for the integration of current and planned battlefield automation systems. It will be, in essence a "system of systems" designed to optimize the positioning, interaction, and flow of information among the various staff agencies (G-2, G-3, Operations Directorate, etc.) and their automated information systems and between the unit and higher, adjacent or subordinate units or headquarters. The Marine corps deploys Component/Joint Task Force (JTF/Marine Air Ground Task Force (MAGTF)) command elements throughout the world to fulfill operational requirements, often in joint/combined forces arenas. The UOC is designed in garrison and tactical versions. The tactical version is called the Combat Operations Center (COC) which is an outgrowth of the integrated COC (ICOC), COC-Interim (COC (I)), and the Enhanced COC (ECOC) developments over the last two years. The garrison version is called the Command Center (CC).

PROGRAM ACCOMPLISHMENTS AND PLANS:

FY 1995 Accomplishments: Funded in various PE and Projects.

This PE, C0065
PE 0206625M, C0062
PE 0206626M, C1443, C2102, and C2122.
PE 0604719N, C1929 and C2085.

PMC	474700	$647	IAS (MEF)
PMC	474700	$0	IAS (TCAC)
PMC	461300	$0	TCO
PMC	461100	$5,304	AFATDS
PMC	459700	$0	ATACC
PMC	461000	$2,788	MTACCS (IDASC portion only)
PMC	461000	$5,245	MTACCS (TCO portion only)
PMC	653200	$0	Training Devices (MTWS only)
PMC	463100	$0	Command Post Systems
PMC	463600	$0	Modification Kits (MAGTF C4I)
PMC	496900	$7,058	Modification Kits (Non-Tel) IDASC PIP
OMMC		$0	TCO
		$0	ATACC
		$0	AFATDS
		$0	IAS
		$0	IDASC

FY 1996 Accomplishments:

FY 1997 the follow Program Numbers were incorporated into this Program Number:

Program Number C0062 Intelligence Analysis Systems (IAS)

Program Number C0065 Communications Control, subproject System Planning, Engineering, and Evaluation Device (SPEED)

Program Number C1929 Advanced Tactical Air Command Central (ATACC)

Program Number C2085 Advanced Field Artillery Tactical Data Systems (AFATDS)

Program Number C2102 Improved Direct Air Support Center (IDASC)

Program Number C2122 Tactical Combat Operations (TCO)

PMC	474700	$0	IAS (MEF)
PMC	474900	$924	Modification Kits (Intel)
PMC	474700	$0	IAS (TCAC)
PMC	461300	$0	TCO
PMC	461100	$10,723	AFATDS
PMC	459700	$6,622	ATACC
PMC	463100	$0	Command Post Systems
PMC	463600	$0	Modification Kits (MAGTF C4I)
PMC	496900	$7,058	Modification Kits (Non-Tel) IDASC PIP
OMMC		$543	TCO
		$108	ATACC
		$493	AFATDS
		$1,078	IAS
		$319	IDASC

FY 1997 Accomplishments:
$177 TCO: Continue automatic relay and message routing.
$393 TCO: Completed Phase II Operational Requirements Document (ORD) requirements and began incorporating Phase III requirements.
$90 TCO: Complete LINK-11 Radar to computer software and OT-HT Gold message format.
$447 IAS: Integrated investigation of hardware engineering change proposals (ECPs) for MEF IAS, IAS Suites and IAS workstations.
$383 IAS: Integrated Incorporation and testing new standard software applications. Achieved MS III.
$100 IAS: Initiated interoperability testing and updated documentation.
$250 IAS: Conducted IAS Workstations (Battalion/Squadron) development.
$245 IAS: Initiated program management for Integrated Logistics Support and Systems Engineering.
$1,117 IAS: Initiated interoperability and compatibility standards listed in the ORD.
$126 IDASC: Completed DASC Phase I auto request. Continued work on DASC Phase II software block upgrade requirement including follow-on effort to complete tailoring software for one hardware platform. Upgraded software will provide seamless automation with other USMC Aviation Command and Control Agencies.
$137 IDASC: Initiated introduction of new technology into existing system baseline and investigated hardware engineering change proposals for installing technology upgrades.
$101 IDASC: Updated and completed data packages/training manuals, developmental testing, and software documentation.
$366 MAGTF C4I Baseline: Continue software development directly related to the transition and conversion of C4I TCO system requirements into the Joint Maritime Command Information Strategy (JMCIS)/Defense Information Infrastructure (DII) Common Operating Environment (COE) in support of the MAGTF C4I Baseline Effort.
$204 MAGTF C4I Baseline: Continue software integration of TCO system requirements to the MSBL.
$136 MAGTF C4I Baseline: Continue developmental and battle lab testing of TCO system requirements to the MSBL.
$1,535 ATACC: Initiated and completed the evaluation of USAF Mult-Source Correlation System.
$153 ATACC: Initiated S/W development efforts and completed efforts for the ATACC program.
$305 ATACC: Initiated and completed ILS documentation, provided program management support, and related travel cost.
$490 ATACC: Conduct study for the development of the Contingency Theater Automated Planning Systems (CTAPS) and the Theater Battle management Core System (TBMCS) which is the follow on to CTAPS.
$259 ATACC: Initiated study for the development of Meshnet Marine Air C2 Common Voice Communications Subsystem.
$755 AFATDS: Continued developmental and interoperability efforts with the Army on AFATDS 97 software. This effort will include migration to the DII COE and adding additional fire support functionality.
$1,129 AFATDS: Prepare 'MEF Slice' test-bed unit and conduct the AFATDS 97 Multi-service Operational Test and Evaluation (MOTE). This effort will include hardware fielding, operator training, and unit/Command Post Exercise Training.
$240 AFATDS: Initiate developmental effort to identify a smaller computer for the Marine Corps.
$1,229 Forward Financed efforts in this project and program element for IAS, IDASC, TCO and AFATDS programs.
$400 TCO: Completed Phase III ORD requirements.
$117 IAS: Initiated and tested prototype IAS Workstations.
$100 IDASC: Investigated hardware ECPs for the HMD DASC system for improved digital communications capabilities and for computer hardware upgrades.
$612 AFATDS: Continued developmental and interoperability efforts with the Army on AFATDS 98 software. This effort will include migration to the DII COE, adding additional fire support functionality, continuing work on identifying a smaller computer for the USMC, preparing test units for a Multi-Service Limited Users Test of AFATDS 98, and in obtaining a Procurement Decision
$10,367

PMC	474700	$6,880	IAS
PMC	474700	$4,615	IAS MOD
PMC	474700	$10,707	IAS (TCAC)
PMC	461300	$6,673	TCO
PMC	463100	$0	AFATDS
PMC	463600	$4,084	Modification Kits (MAGTF C4I)
PMC	496900	$0	Modification Kits (Non-Tel) IDASC PIP
OMMC		$110	TCO
		$18	AFATDS
		$40	IAS MEF
		$0	IDASC

FY 1998 Accomplishments:

$200 TCO: Completed Phase III ORD requirements.

$0 TCO: Completed Phase III ORD requirements. (This effort forwarded financed with $400 FY97 funds.)

$134 TCO: Initiated the integration of software and hardware changes into existing system and perform testing.

$517 TCO: Initiated the incorporation of Phase IV ORD requirements.

$70 TCO: Completed automatic relay message routing.

$152 IAS: Continued testing of new standard software applications.

$50 IAS: Continued interoperability testing with system hardware and software modifications.

$80 IAS: Initiated and tested prototype IAS Workstations.

$0 IAS: Initiated and tested prototype IAS Workstations. This effort financed with $117K of FY 97 funds.

$257 IDASC: Investigated hardware ECPs for the HMD DASC system for improved digital communications capabilities and for computer hardware upgrades

$0 IDASC: Investigated hardware ECPs for the HMD DASC system for improved digital communications capabilities and for computer hardware upgrades. This effort financed with $100K of FY 97 funds.

$229 IDASC: Incorporated and tested new standard software applications, which will allow automated communication between the DASC and the fire support coordination center.

$60 IDASC: Conducted interoperability testing with system modifications to ensure that incorporated modifications will allow automated communications between USMC and joint command and control systems.

$331 IAS MOD: Initiated hardware ECPs for MEF IAS and IAS suites.

$150 IAS MOD: Follow-on testing of ECPs and program management support.

$747 MAGTF C4I Baseline: Continued software development of the MSBL developed to the DII COE. Includes enhanced open system, distributed directory services, distributed file service and enhanced security.

$448 MAGTF C4I Baseline: Continued software integration to the MSBL.

$298 MAGTF C4I Baseline: Continued developmental and battle lab testing of MSBL.

$304 EICOC/UOC: Began investigating GOTS/COTS software/hardware to support automation of Command Post Systems.

$309 EICOC/UOC: Began integration efforts of GOTS/COTS software/hardware into the Command Post System.

$148 EICOC/UOC: Began developmental testing of Command Post System.

$1,502 AFATDS: Continued developmental and interoperability efforts with the Army on AFATDS 98 software. This effort will include migration to the DII COE, adding additional fire support functionality, continuing work on identifying a smaller computer for the USMC, preparing test units for a Multi-Service Limited Users Test of AFATDS 98, and in obtaining a Procurement Decision. Army achieves MSIII.

$0 AFATDS: Continued developmental and interoperability efforts with the Army on AFATDS 98 software. This effort will include migration to the DII COE, adding additional fire support functionality, continuing work on identifying a smaller computer for the USMC, preparing test units for a Multi-Service Limited Users Test of AFATDS 98, and in obtaining a Procurement Decision. This effort financed with $612K of FY97 funds.
$41 ATACC: Multiple Source Correlation System (MSCS) ECP 97012 for CTT3 integration
$6,027

PMC	463100	$9,349	TCO
PMC	474700	$9,561	IAS
PMC	474700	$3,008	IDASC
PMC	474900	$1,383	IAS MOD
PMC	463100	$0	AFATDS
PMC	463100	$0	UOC
OMMC		$447	TCO
		$547	IAS MEF
		$187	IDASC
		$0	AFATDS
		$0	TCAC
		$790	MEWSS

FY 1999 Planned Program:

$1,098 TCO: Initiate Phase IV ORD requirements.
$230 TCO: Integrate software changes into existing systems and perform testing.
$155 IAS: Investigate Hardware/Software interoperability issues in regards to Marine Corps C4I and Joint intelligence and operations systems.
$548 IAS: Begin development of intelligence applications into the CZPC software baseline.
$364 IDASC: Investigate hardware ECPs for the HMD DASC system for migration towards a common USMC Aviation Command and Control Communications System.
$242 IDASC: Continue testing new standard software applications. Continue interoperability testing with system modifications.
$231 IAS MOD: Continue investigation of hardware ECPs for MEF IAS and IAS Suites.
$168 IAS MOD: Continue program management for testing of ECPs.
$424 MAGTF C4I BASELINE: Continue software development of the MSBL developed to the (DIICOE). Includes enhanced open system, distributed directory services, distributed file service, and enhanced security.
$284 MAGTF C4I BASELINE: Continue software integration to the MSBL.
$189 MAGTF C4I BASELINE: Continue developmental and battle lab testing of the MSBL.
$784 MAGTF C4I BASELINE: Initiate the integration (system level) of Enhanced Position Location Reporting System (EPLRS) with MAGTF C4I tactical data systems.
$245 MAGTF C4I BASELINE: Initiate the integration (network level) and fusion of EPLRS and MAGTF C4I tactical data systems into a seamless and integrated data network that provides command, control, and situational awareness data connectivity
$867 MAGTF C4I BASELINE: Begin software development necessary to allow the integration of the Combat Operations Center Interim (COC (I)) into the MAGTF C4I software baseline.
$375 EICOC/UOC: Continue investigating GOTS/COTS software/hardware to support automation of Command Post Systems.
$478 EICOC/UOC: Continue integration efforts of GOTS/COTS software/hardware into the Command Post Systems.
$313 EICOC/UOC: Continue developmental testing of Command Post System.
$2,291 AFATDS: Continue developmental and interoperability efforts with the Army on AFATDS 98 software. This effort will include migration to the DII COE), adding additional fire support functionality,

continuing work on identifying a smaller computer for the USMC, preparing test units for a Multi-Service Limited Users Test of AFATDS 98, and in obtaining a Procurement Decision.
$775 TCAC PIP: M65 Multi land family and integration of CA & TN tools. Integration with Joint Signet Systems, complete the Signet analysis toolkit, matches integration
$157 SBIR: 157K portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.
$10,218

PMC	463100	$1,560	TCO
PMC	474700	$10,153	IAS
PMC	474700	$1,402	IDASC
PMC	474900	$1,658	IAS MOD
PMC	463100	$3,553	AFATDS
PMC	463100	$0	UOC
OMMC		$169	TCO
		$1,529	IAS MEF
		$144	IDASC
		$339	AFATDS
		$1,168	TCAC
		$820	MEWSS

FY 2000 Planned Program:
$976 TCO: Begin incorporating Phase V ORD requirements.
$417 TCO: Complete Phase IV ORD requirement and Integrate software changes into existing system and performed testing. Complete Phase II ORD requirements.
$400 TCAC: Develop software to maintain compatibility with Signals Intelligence systems.
$495 TCAC: Integrate signals intelligence correlation.
$152 IAS MOD: Investigate MEF IAS system Performance enhancement.
$53 IAS MOD: Conduct system software enhancement
$100 IAS MOD: Conduct system interoperability testing with Marine Corps and Joint systems to include: TCO, GCCS, ASAS, AFATDS, and other emerging systems as needed to ensure Marine Corps compatibility in the joint arena.
$200 IAS MOD: Begin ECP documentation and integration.
$249 IAS MOD: Continue C2PC Intel software development.
$1,000 MAGTF C4I BASELINE: Continue the development of improved software in order to maintain pace with the DII COE [GCCS (DISA) & GCCS-M (Navy)].
$3,283 MAGTF C4I BASELINE: Begin the migration of additional functionality segments (11) to the MSLB.
$1,802 MAGTF C4I BASELINE: Integration of new software with the systems and existing software.
$1,283 MAGTF C4I BASELINE: Continue the certification & security testing of new software to ensure interoperability (Battlelab) (GCCS-M version 3.2 & C2PC version 6.0).
$450 MAGTF C4I BASELINE: Update/Improve the Requirements Traceability Matrix (RTM) & Revalidate the REVIC model estimates.
$2,273 AFATDS: Continue developmental and interoperability efforts with the Army on AFATDS 98 software. This effort will include migration to the DII COE), adding additional fire support functionality, continuing work on identifying a small computer for the USMC, preparing test units for a Multi-Service Limited Users Test of AFATDS 98, and in obtaining a Procurement Decision.
$6,984 UOC: Begin system engineering development, integration, and manufactures Engineering Development Models (EDMs).
$997 UOC: Begin Tactical Data System (TDS) NT development, engineering, integration and manufacture.
$1,995 UOC: System testing and assessment.
$23,109

PMC	463100	$0	TCO
PMC	474700	$0	IAS
PMC	474700	$0	IDASC
PMC	474900	$1,407	IAS MOD
PMC	463100	$3,704	AFATDS
PMC	463100	$0	UOC
OMMC		$707	TCO
		$1,848	IAS MEF
		$148	IDASC
		$428	AFATDS
		$1,313	TCAC
		$926	MEWSS

Program Number C3001
Program Element 0602131M
Marine Corps Landing Force Technology

APPN	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
RDT&E	16,045	17,101	20,338	16,906	18,036	20,099	16,980	16,745	16,848	16,030	12,478	12,970

Mission Description and Budget Item Justification: The basic roles and missions of the Marine Corps (the seizure and defense of advanced naval bases, the conduct of land operations essential to the naval campaign, and other such duties as the President may direct) and specified in Title 10 USC 5063 to ensure the continued existence of Marine Corps as a separate and major military service, both with distinct warfighting mission and as a flexible instrument of national policy. The National Security Act of 1947 and DoD Directive 5100.1 are the basis for conducting this Marine Corps Effort.

The primary objective of this PE is to develop and demonstrate the technologies needed to meet the Marine Corps unique responsibility for amphibious warfare and subsequent operations ashore. This PE provides the knowledge base to support Advanced Technology and is the technology base for future amphibious/expeditionary warfare capabilities. This PE supports the concept based requirements system of Marine Corps Combat Development Center (MCCDC) and responds directly to the Marine Corps S&T roundtable process managed by MCCDC and the Office of Naval Research.

FY 1988 Accomplishments:

Amphibious Surface Mobility/Logistics Technology: Completed design and testing of several subsystems associated with the High Water Speed Technology Demonstrator (HWSTD) (Advanced drive train, advanced suspension system and lightweight tracks). Defined and evaluated advanced container and handling equipment and tactical fuel system improvements in support of over-the-beach operations. Evaluated protective material for rapidly emplaced fortifications.

Amphibious Weapons and Defensive Systems Technology: Completed lab test of underwater imaging of mines using laser illumination for surf zone mine detection and demonstrated linked miniature shaped charge systems capabilities to neutralize mined areas.

Battlefield Electronic Support: Completed work on radio antenna remoting enhancement and development of a low loss fiber optic cable for long haul communications.

Marine Corps Manpower Technology: Conducted testing of personnel and assessed data related to identifying stress and fatigue tasks.

FY 1989 Accomplishments:

Amphibious Surface Mobility/Logistics Technology: Completed fabrication of High Speed Water Technology Demonstrator. Achieved over water speed in excess of 20 knots.

Mine Detection Technology: AMDAS – The Airborne Imaging Test Bed was completed providing feasibility of the AMDAS concept. Imaging objects underwater with a single laser pulse demonstrated. SMDG – "Smoking hole" detection with acoustic detection demonstrated.

Land Mine Countermeasures Technology: DEMNS – Successful demonstration of Rocket deployment of simulated net. Characterized alternative fuels for FAE.

Amphibious Logistics Technology: Evaluated advanced material handling alternatives. Started protective fabric structures task. Automated reading and marking concepts validated.

Chemical/Biological Defense Technology: Advanced in voicemitters. Completed second skin/quick doff design and prototypes. Advances in FLIR detection. Completed redesign of prototype aerial standoff detector. Successful aerosol testing.

Battlefield Electronic Support Technology: Procured components to build a C2 platform for evaluation. Awarded four SBIR contracts in tactical deception.

Weaponry Technology: QAZ pressing demonstration. Data package completed for direct fire rocket. Terminated high performance seeker work. Developed tech base to support LAV-AD. Fabricated smoke generator to test as multi-mode marker. Completed finite element analysis of mortar base plate.

Demonstrated feasibility of 25mm APTS. Progress in advanced laser materials. Successful demonstration of Tround Gun.

Marine Corps Manpower Technology: Biopsychometric measures strongly correlated with marksmanship improvement.

FY 1990 Accomplishments:

Surface Mobility Technology: Completed testing of High Water Speed Technology Demonstrator (HWSTD), fabricated Propulsion Systems Demonstrator (PSD), completed electric drive M-113 vehicle. Verified the drive train computer control.

Chemical/Biological Defense Technology: Completed tesing of aerial detector. Evaluated decon additives, protective clothing/rainwear materials, new sorbent decon technology, pilot plant Waterproof Breathable Reactive Sorptive (WARS) materials. Developed diagnostic kit technology. Initiated filtration systems concept assault mask. Transitioned voicemitter/quick-doff hood to PE 0603635M.

Mine Detection and Mine Countermeasures Technology: Completed threat assessment and characterization of distributed explosive techniques/acoustic measurements. Transitioned AMDAS to ATD PE 0603640M. Conducted multi-spectral mine detection signature (MSSD) tests; joint MDAS/Standoff Mine Detection Ground (SMDG) flight and ground tests with Army Remôte Minefield Detection System (REMIDS) and Airborne Mine Detection and Reconnaissance System (AMIDARS) system.

Battlefield Electronic Support Technology: Demonstrated USMC Command Information Processor (CIP) for the C2-2000 concept study. Tested tactical deception devices. Demonstrated forward observer device. Began software interfaces for C2-2000 concept study.

Amphibious Logistics Technology: Completed designs on High Speed Controls/Automated Load Acquisition; D7G protection Kit.

Weaponry Technology: Began three new initiatives. Integrate passive sensor/quiet radar technology. Transitioned Armor Piercing Tubular Sabot (APTS) to ATTD. Initiate Advanced Lightweight Ground Weaponry (ALGW) and Special Purpose Weaponry (SPW) efforts in support of SOLIC.

FY 1991 Accomplishments:

Surface Mobility Technology: Transitioned KA-5502 Diesel Engine Technology to AAAV program; development testing initiated. Completed Turbo Rotor Compound (TRC) monocylinder test rig cold testing; initiated hot testing. Terminated Water Piston Propulsion task.

Chemical/Biological Defense Technology: Completed fabrication of prototype lightweight mask candidates; Micro Forward Looking Infrared (FLIR) upgrade; interior vehicle working scenario assessment. Optimized and evaluated foam decon technology. Lightweight suits prototyped and tested. Deployed prototype bio detector to Southwest Asia (SWA).

Mine Detection and Mine Countermeasures Technology: Optimized distributed explosive deployment method. Initiated sensor/decoy integration and fabrication of testbed/Multi-spectral Sensing detector optical system and stand-off mine detection. Completed initial D7G bulldozer flail testing. Extensive filed testing of Mine Detection and Surveillance (MIDAS) testbed conducted in support of AMDAS. Terminated Magneto-Hydrodynamic (MHD) effort as not feasible.

Battlefield Electronic Support Technology: Completed two-station demonstration of CIP. Began development of improved interrogation devices. Completed Forward Observer Technology effort and transitioned to PE 0603640M. Transition networking technology to Amphibious Assault Networking ATD, PE 0603640M.

MAGTF Survivability Technology (MST): Tested D7G countermine flail and made available for Operation Desert Storm. Characterized ballistic protective fabrics. Demonstrated decoy/deception devices. Analyzed explosive blast-resistant vehicle bodies.

Amphibious Logistics Technology: Initiated concept exploration baseline for future Amphibious Logistics Concepts. Formed joint steering committee. Completed technology search and published report.

Weaponry Technology: Completed critical experiments in ??? concepts and hypergolic alloys against energetic materials threats. Began three new initiatives; started and terminated Advanced Helicopter Gun System (AHGS). Completed Lightweight 155mm Howitzer test. Developed operational

concept for LAV-AD. Completed and transitioned Multi-Mode marker. Completed Mortar baseplate effort. Initiated ALGW and SPW efforts in support of SOLIC.

Manpower and Training Technology: Integrated weapons simulator with neuroelectric testing system and collected data/refined performance measures. Transitioned Force Management Forecasting. Established correlation's between marksmanship and neuroelectric waveforms. Identified range of OTH training requirements.

FY 1992 Accomplishments:

Completed fabrication and model testing of Crypto Pulse Propulsion (CPP), a propulsion device for advanced marine vehicles that employs bursts from columns of water jets similar to water jet propulsion. Evaluated and tested improved elastomers for use on Lightweight Band Track. Completed preliminary design of: Helo Transportable Multi-Mission Platform (HTMMP), a high speed/mobility self-loading pallet carrier, and a space frame hull. Entered into a Joint Light Modular Combat Vehicle (LMCV) development program with Advanced Research Projects Agency (ARPA) and the Army.

Determined viability of peroxide compounds for decontamination; developed antibodies for most significant biological warfare agents; provided developmental materials for Lightweight Suit Advanced Technology Transition Demonstrations (ATTD); transition advanced canister to program manager – Combat System Support (CSS) for procurement; and initiated function-based detection effort utilizing live cell technology.

Completed the Standoff Mine Detection Ground (SMDG) field tests for multispectral Marine Detection and Surveillance test bed. Optimized and tested distributed explosive Mine Countermeasures (MCM) technologies. Fabricated/tested Wide Area Mine Clearance (WAMC) components/breadboard system. Refined WAMC countermeasure software.

Completed C2-2000 project, a command and control concept study to provide advanced battlefield electronic support for the 2000 time frame. The study involved testing of improved interrogation devices, demonstration of a Command Information Processor, forward observer devices, and software interfaces. Completed transition of applicable elements to various Marine Corps Tactical Command and Control Systems (MTACCS) projects. Expanded investigations of Short-Ranged communications technologies.

Evaluated ballistic protective fabric against live munitions (area tent). Completed classified efforts 645 and 500. Entered into joint Low Observable Technology development program with Land Systems Office (LSO) ARPA. Completed Phase I of Joint USMC/Army Muti-Spectral Paint Effort. Evaluated advanced composite armor concepts. Completed metal matrix composite armor evaluation.

Conducted workshops on functional and technology needs of the USMC in Advanced Amphibious Logistics. Published proposed technology categories for high-priority analyses.

Completed testing of cognitive algorithms of the Advanced Processors for Weapons Sensor Fusion (APWSF), initiated concept development for Expendable Acoustic Remote Sensor Artillery Launched (EARS-AL), and the Acoustic and Electronic Warfare Support Measures sensors of the Advanced Systems for Air Defense (ASAD. Completed testing of the Armor Piercing Tubular Sabot (APTS). ASAD was also packaged for transition to USMC ATTD in FY 93.

FY 1993 Accomplishments:

$3,324 Surface Mobility: Tested scaled model of Crypto Pulse Propulsor (CPP) and validated analytical performance models. Completed testing one-half of the set of band tracks to evaluate two elastomers. Began testing of lightweight liquid to air heat exchanger. Installed and tested fluid strut suspension for the LAV. Results portend significant weight savings and component life extension in the marine environment.
$5,193 Mine Detection: Developed technique for analysis of selected data using image-processing algorithm. Initiated the Joint Mine Detection Technology Project. Made significant advances in physics-based image processing, image processing, image synthesis, and automatic target recognition. Made significant contributions to mine detection capability in support of the joint and combined operations in both littoral and land operations across the spectrum of conflict. Transitions Standoff Mine Detection Ground Project to Joint Standoff Mine Detection System under PE 0603640M, C2079.
$3,240 MAGTF Command, Control, Communications, Computers, and Intelligence (C4I): This program was formerly titled Battlefield Electronic Support. Awarded International short Ranger Communications

(ISRC) contracts. Demonstrated Air Officer Support Station concepts within the C4I system at Secure Tactical Data Network. Demonstrated Amphibious Assault Planner. Defined Marine Corps Forces (MARFOR) anchor desk requirements. These efforts serve to ensure that communications will be continuous, seamless, and secure in the transition from littoral to land warfare, and that sustainment links are integrated into the command and control network.
$2,487 Survivability: Demonstrated Active Exhaust Cancellation system on the LAV. Demonstrated advances in multi-spectral paints. Conducted full-scale demonstrations of hybrid Kevlar/Ballistic nylon. Tested ceramic armors on a variety of backing materials. The focus of these efforts is survivability through low signature and penetration resistance. These properties are more sensitive to vehicles that must swim as well as maneuver on the land than to those that are only land mobile. Signatures are also more difficult to control against the littoral background than against a land background. Advances will have wide spread joint applications.
$1,870 Advanced Amphibious Logistics: Developed system architecture for Recording and Tracking. Demonstrated Warehousing Tagging. Established Cooperative Research and Development agreements. Evaluated Broad Agency Announcements (BAAs) for industry participation in Advanced Amphibious Logistics Technology. Closely coordinated and integrated with compatible efforts by the Army to address theater level sustainment initiatives. These efforts initiate the execution of a road-mapped approach to provide critical technology in support of Operational Maneuver From the Sea, which will mesh with the Army system once ashore.
$2,721 Targeting Sensors: Defined architecture for Intelligent Fire Control (IFC) support technology testbed. Awarded High-G acoustic transducer contract. Developed database for obscurants and spectral analysis techniques and results.
$1,822 Weaponry: Formulated and evaluated positive energy encapsulant. Completed evaluations of chemi-luminescent liquid filled projectiles. Optimized core penetrators for titanium sabot for 20mm – 25mm Multi-purpose Tubular Sabot. Technology is available for transition to Naval Air System Command, Crystal City, Virginia and the Joint Service Small Arms Program, Picatinny Arsenal, New Jersey.
$360 Chemical/Biological Defense (CBD): Demonstrated rapid detection of Biological Agents using goat and monoclonal antibodies to ricin and applied for patent. Demonstrated Direct Current auto nulling bridge extraction of small signal transients from high noise background and applied for patent. These are tow of the most significant advanced made in detection, and are clearly dual use techniques across a broad spectrum of commercial, agricultural, and treaty compliance scenarios. Terminated all CBD Technology efforts in the third quarter of FY 1993, to include minor allowable efforts under Tri-Service Reliance Agreements.
$550 Manpower: Developed and validated a theoretical quality of life model via random sampling of 16,000 Marine worldwide. This project was terminated due to funding reductions. The technology was transferred to the Navy.
$21,567

FY 1994 Accomplishments:
$2,599 Surface Mobility: Evaluated and developed advanced vehicle concepts. Initiated Broad Agency Announcement (BAA) selections. Began full scale Crypto Pulse Propulsor. Analytically evaluated the water jet deaeration system. Tested full vehicle set of lightweight band track with best elastomer compound. Continued testing cooling system (air-liquid and liquid-liquid). Transitioned turbine air inlet development to PE 0603640M.
$2,775 Mine Detection: Continued image processing and Automatic Target Recognition development and implementation. Transitioned preliminary implementation for use in COBRA to the PE 0603640M. Conducted design tradeoff study for a tunable filter multi-spectral camera in the ultra-violet, visible, and infrared spectrum. Conducted parallel investigation of a field-deployable agile tunable laser to slow nighttime mine detection.
$2,620 Mine Countermeasures: Evaluated selected anti-mine munitions for integration into distributed explosive technology. Investigate heavy metal liner concepts (tungsten, tantalum, and alloys). Completed exploration of initiation concepts for explosive arrays. Focused on anti-helicopter mines via threat characterization, conceptual countermeasures, predictive modeling, and breadboard systems.

$2,677 MAGTF C4I: Completed three intentional short-range communications phase II contracts. Specified tactical cellular system. Solicited and evaluated industry proposals through the BAA process for OTH communications. Developed hardware/software specification for most promising approaches for OTH communications. Demonstrated automated capability for air support request and landing plan generation. Analyzed requirements and specified a battalion level, field-capable, tactical simulator and decision aid. Began development of a prototype field Korean/English language translator system for tactical reporting and air/ground support requests.
$1,520 Survivability: Completed phase II multi-spectral camouflage paint. Initiated efforts on radar false target generator concepts. Continued joint lightweight armor database work. Evaluated new ceramic armor materials and ceramic-metal composites and techniques for forming and combining. Participated jointly with Advanced Research Projects Agency (ARPA), Arlington, VA in advanced land combat systems generation II.
$2,534 Advanced Amphibious Logistics: Demonstrated Radio Frequency Tagging and Tracking in a functionality sharing in a chaotic environment, and for information distribution. Hosted USENET on emerging Command, Control, and Communications systems as a demonstration. Assessed and evaluated Low Earth Orbit, Very Low Frequency satellites for geographical (geo)-tagging facilitation of two-way communications link. Survey, re-applied, and modified existing logistics computer models to construct new models to test advanced internet working and object-based paradigms to determine expected OMFTS logistics system behavior.
$1,473 Targeting Sensors: Continued implementation of Intelligent Fire Control (IFC) testbed concepts. Implemented processing paradigms in Fourier, wavelet, and harmogram pre-processing techniques. Demonstrated functionality of Expendable Acoustic Remote Sensors. Continued investigation of technologies in near infrared spectrum and provided system tradeoff studies for Generation II/III obscurant challenges. Initiated modeling efforts to study the entire range-gated imaging scenario. Re-evaluated Combat Identification efforts in light of ongoing joint efforts. Compared detailed radar design concepts to optimal systems engineering designs to permit down-selection from NDI. Completed detailed radar design. Transition Riverine Acoustic Sensor System effort to Advanced Development. Decreased the scope of effort due to technical finding and analysis.
$807 Weaponry: Integrated auto-loading components of mortar system into a full scale mock-up to determine space claims and human engineering factors. Continued BAA evaluation process. Developed and tested various requirements and optimized over-pressure. Measured combined performance through field tests. Tested and evaluated dissemination techniques, visibility recognition ability, and marker-terrain contrast in point recognition tasks. New efforts included contract award under BAA and establishment of Professional Engineering station is support of weapon development.
$

FY 1995 Accomplishments:
$2,610 Surface Mobility: Completed fabrication of the Joint Tactical Electric Vehicle. Conducted initial performance testing and demonstrations. Completed evaluation of Articulated Electric Drive Trailer. Completed fabrication and testing of Inductive Coupler technology. Continued Corrosion Prevention and Control development, procurement, and testing. Developed system level concepts and technology roadmap of future surface mobility assets supporting OMFTS. Awarded BAA contracts.
$2,600 Mine Detection: Continued Automated Target Recognition efforts. Transitioned program to COBRA. Completed design and fabrication of a tunable filter multi-spectral camera. Initiated investigation of alternate sensor technologies for mine detection, especially in adverse environments (rain, fog, turbid water). Initiated multi-spectral visible/thermal infrared camera image fusion investigation for cued mine detection. Received and evaluated responses.
$2,512 Mine Countermeasures: Executed selected BAAs to emulate threat capabilities. Conducted full scale tests in mechanical mine neutralization. Completed definition of surrogate mine countermeasures systems requirements. Evaluated countermeasures techniques. Completed modeling and simulation and conducted system demonstration.
$2,074 MAGTF C4I: Demonstrated Tactical Cellular System. Completed Phase I contracts for OTH communications hardware/software specification and design. Expanded artificial intelligence and

transitioned Amphibious Assault Planner to the PM for MAGTF C4I. Demonstrated a prototype battalion level, filed capable, tactical simulator and decision air. Demonstrated a prototype field Korean/English language translator system for tactical reporting and air/ground support request.
$1,318 Survivability: Completed source selection for false target generator effort. Continued joint participation with Advanced Applied Research Agency in Advanced Land Concepts Systems Generation II, Phase II. Continued work in evaluating new materials for armor system applications. Initiated development of Electro-armor technologies. Defined Tactical Decal specification and vehicle integration.
$3,015 Advanced Amphibious Logistics: Completed system concept for recording and tracking. Proposed first concept for system configuration integration for recording, tagging, and tracking. Developed expeditionary engineering technologies concepts. Developed bulk liquid system concept. Initiated sea-basing cargo transfer technologies support efforts. Awarded selected BAAs in support of roadmap. Demonstrated 3 Kilowatt generator.
$1,920 Targeting Sensors: Demonstrated Integrated Fire Control (IFC) system. Conducted "all up" demonstration of Expendable Acoustic Remote Sensor. Completed Gated Laser Video System proof of concept and prepare for transition to Marine Corps ATD, PE 0603640.
$700 Weaponry: Demonstrated Mobile Automatic Fire Support System auto-loader mortar and transitioned to the PM for Ground Weapons. Demonstrated advanced concepts in point recognition projectile jointly with the Army. Evaluated and awarded BAAs.
$16,749

FY 1996 Accomplishments:
$3,577 Command and Control (C2). Completed systems level design for networked Over-The-Horizon (OTH) communications system. Demonstrated intelligent automated landing plan generator. Provided complete order of battle capability for battalion levels, tactical simulator and demonstrated it. Expanded field language translator system to provide briefing capability. Performed Phase I technology application for collaborative planning and decision aids. Exercised cellular communications in support of joint operations. Expanded joint countermeasure C4I architecture to support Operational Maneuver From The Sea (OMFTS). Completed design of a Radio Reconnaissance receiver for forward Recon Teams. Performed a comparative analysis of data compression algorithms to evaluate best allocation for digital video project.
$7,728 Maneuver. Completed testing of the Joint Tactical Electronic Vehicle and transitioned technology to Marine Corps Advanced Technical Demonstrations (ATD), PE 0603640M, Project C2223 and the joint Marine Corps, United Stated Special Operation Command (USSOCOM) Light Strike Vehicle (LSV) acquisition program. Completed development and testing of Helo-Transportable Multi-Mission Platform and Articulated Electric Drive Trailer (HTMMP/AEDT) and transitioned to joint Marine Corps, USSOCOM LSV program. Continued field tests of corrosion resistant components and inserted new components/advanced technology on field demonstration with Combat Service Support platforms. Conducted field tests on lightweight, corrosion resistant plastic radiators on Highly Mobile Multi-Purpose Wheeled Vehicles (HMMWV) and Logistics Vehicle Systems (LVS) vehicles. Initiated and continued testing of high temperature coatings and flame-sprayed corrosion resistant coatings. Continued current, and awarded new contracts, for concept development of amphibious logistics transportation systems to support seabase-to-objective maneuver. Facilitated and supported on-going seabase, Maritime Prepositioned Forces (MPF), and future concepting between Marine Corps and Navy expeditionary warfare organizations. Procured experimental prototype tunable filter multi-spectral camera and assessed passive millimeter wave (MMW) technology shortfalls. Designed and fabricated feasibility demonstrator sensor device for mine detection in adverse weather and began laboratory tests. Solicited responses to extend operational envelope for multi-spectral mine detection and improved buried mine detection. Demonstrated visible/thermal image fusion technologies and transitioned to Coastal Battlefield Reconnaissance and Analysis (COBRA) Demonstration/Validation) program. Completed full scale testing of mechanical mine neutralization and Off-Route Smart Mine Clearance breadboard and key countermeasures concept testing. Completed evaluations of countermeasure techniques and transition activities to Army and Program Manager. Completed vehicle landmine survivability system demonstrations, transitioned program to Army, and installed kits on vehicles involved in recent military operations in Bosnia. Completed anti-helicopter

predictive modeling. Corrosion and expeditionary transportation efforts will be executed under the Logistics Imperative beginning in FY 1997.
$2,546 Logistics. Selected and awarded Broad Area Announcement (BAA) contracts in support of technology road map. Expanded program to incorporate Logistics Command and Control and Logistics Transportation. Established Combat Service Special Operations Command/Tactical Logistics (CSSOC/TACLOG) test site. Prototyped air-liftable material handling equipment for forward areas. Began concept validation for se-basing and ship to shore transportation/distribution systems through modeling, to support a matrixed concept of operations. Initiated technology supports efforts for Maritime Prepositioned Force operations technology. Completed recording and tracking system configuration integration. Selected and awarded BAA contracts in support of technology roadmap. Completed recording and tracking system configuration integration. Completed Expeditionary Engineering Technologies system concepts. Completed validation of Amphibious Bulk Liquid Technology system configuration. Continued developing technology concepts for sea-basing cargo transfer technologies. Initiated technology support efforts for Maritime Prepositioning forces operations technology. Solicited BAA responses for demonstrable system components to support concepts and follow on Marine Corps ATD efforts in PE 0603640M, Project C2223.
$3,020 Firepower. Completed advanced testbed development. Transitioned Gated Laser Video System to Marine Corps ATD PE 0603640M, Project C2223. Started development of sensor registration, sensor orientation, multiple sensor data fusion, and sensor communication and tactical target tracking in near perfect real-time tactical Integrated Fire Control (IFC) system. Continued to exploit emerging technology through the BAA process. Completed autoloader and transition technology to Program Manager. Developed concepts for inexpensive, autonomous and guided mortar rounds for the auto-load system. Analyzed technology deficiencies, and continued to nullify those deficiencies through the BAA process.

Project Albert funds the development methodologies at the Maui High Performance Computer Center (MHPCC) to run and assess large-scale analysis of the Irreducible Semi-Autonomous Adaptive Combat (ISAAC) agent based land combat model; to support the Joint Integrated Virtual Environment for Simulation (JIVES) program and conduct a proof-of-concept of generative analysis in urban warfighting environments; to assess the Swarm artificial life modeling tool in an urban environment; and to incorporate applicable emerging results from the previously mentioned ALBERT processes in the Maneuver Warfare Analytical and Research System (MWARS) structure.

FY 1997 Accomplishments:
$4,267 Maneuver Imperative: Continued survivability development and integration into Joint DARPA/USMC/SOCOM Reconnaissance, Surveillance and Targeting Vehicle (RST/V) program as well as the Marine Corps LAV. Completed Threat Oriented Survivability Optimization Model (TOSOM) development. Completed Joint Tactical Electric Vehicle (JTEV) development and testing: transitioned to RST/V. Began multi-spectral camera upgrade for mine detection. Completed shape charge mine neutralization optimization and transitioned to Joint Standoff Minefield Breacher Program (PE 0604612M) and Navy Explosive Neutralization (EN)-ATD.
$3,379 Firepower Imperative: USMC Test, Evaluation, Assessment, Modeling, and Simulation (TEAMS) facility fully operational. Advanced Electronic Signal Monitoring (ESM) sensor prototype completed and tested. Smoke and Obscurants testbed software demonstrated. High Resolution Wind (HRW) for effects of environmental on acoustic sensors demonstrated. First demonstration of sensor alignment/registration completed. FO/FAC to Naval gun integration through AFATDS demonstrated. Continued to exploit emerging technology through the BAA process. Begin investigation of fire-from-enclosure for shoulder launched weapon system. Demonstrated Advanced Heads-up Display System.
$2,052 Command and Control Imperative: Demonstrated Commander Critical Information Requirements in Hunter Warrior Advanced Warfighting Experiment. Demonstrated Information Extration Technologies with DARPA. Demonstrated OTH Communications Technologies. Established Joint Communications working group and joint OTH airborne communications relay program. Prototyped proof of concept Smart Tactical Jammer. Developed and demonstrated handheld Radio Recon Concept. Evaluated Near Term Digital Radio and developed USMC C4I S&T investment strategy. Participated in Joint Warfighting Integration Demonstration (JWID) 97 with Operational Center support demonstrations and experiments.

$5,418 Logistics Imperative: Developed Logistics Imperative road map with emphasis on support of Logistics Information Resources (LOG IR) technologies. Supported initial equipment systems concept development for emerging Seabasing and MPF 2010 naval operational concepts. Developed Combat Service Support Operational Center (CSSOC) database and software management tool enhancements through rapid prototype, referred to as common data repository (COMDAR) and rapid request tracking system (RRTS). Both systems in early user evaluation at Marine Corps advanced warfighting experiments. Completed development of Marine Corps Combat Service Support (CSS) system analytical model. Model used for evaluation of CSS equipment systems in USMC wargamming. Continued development of technology concepts for Engineer, Supply & Services Technologies. Continued development of enhanced transportation and distribution concepts. Evaluated aerial resupply systems in conjunction with new packaging concepts for bulk liquid sustainment for small unit operations. Developed notional system concepts for an Amphibious Expeditionary Logistics Transporter (ELT). Continued research on corrosion resistant materials and coatings for USMC applications.
$2,721 Training and Education Imperative: Began program to develop concept for applying technology to Marine Corps training needs, specifically focusing on Modeling and Simulation. Identified technology tasks to link and integrate Service, DoD and commercial training capabilities as well as service operational systems (embedded training). Developed concepts for training while deployed and at remote sites. Began Rapid Virtual Database Development.
$16,016

FY 1998 Accomplishments:
$3,249 Maneuver Imperative: Completed Preliminary Design of tunable filter multi-spectral camera upgrade for mine detection and processing software development and transitioned to Coastal Battlefield Reconnaissance and Assessment (COBRA) ATD; multi-spectral laser diode array for night illumination were designed and fabricated. Completed Technical Assessment of the Small Unit Riverine Craft (SURC). Completed Technical Configuration Description of SURC to support Technology Demonstrator craft in FY99 and support USMC Riverine Center of Excellence for future operational concept development. Completed Technical Analysis of Mine Countermeasure systems that can be applied to Marine Corps Ground Combat vehicles to support on-the-move, In-Stride mine countermeasure. Completed Technical Analysis of Urban Warfare mobility study to address systems that can be applied to Marine Corps Ground Combat vehicles to support enhanced operations in urban environments. Continued long term corrosion exposure testing of materials, components and coatings that will be on future USMC platforms. Findings from 30 month exposure test supported the USMC Advanced Amphibious Assault Vehicle (AAAV) program in hull material downselection and provided a cost avoidance of greater than $50 million, in addition to Logistical Vehicle System Replacement (LVSR) and Medium Tactical Vehicle Replacement (MTVR). Helo-Transportable Tactical Vehicle participated in USMC STEEL KNIGHT exercise, US Special Operations exercises, and USMC Urban Warrior Limited Objective Exercises. These exercises support the operational capabilities definition for the Reconnaissance, Surveillance and Targeting Vehicle (RST/V) program. Completed Hull Life Analysis of the USMC Family of Light Armored Vehicles (LAV). This analysis supports the PMs acquisition plan to conduct a 10 year Service Life Extension Program. Completed testing and reporting of Joint Advanced Survivability Experiment program (classified).
$1,999 Firepower Imperative: Continued development of sensor testbed (alignment/registration). Investigated sensor-to-shooter fire control systems integration. Demonstrated non-magnetic North-finding Azimuth systems. Investigated target discrimination systems integration into Advanced Field Artillery Tactical Data System (AFATDS). Investigated and demonstrated technology to Enhanced Target Acquisition and Location (ETALS) (formerly Forward Observer/Forward Air Controller (FO/FAC)). Investigated advanced small arms weapons systems. Demonstrated fire-from-enclosure technology for shoulder launched weapons systems. Continued Broad Area Announcement (BAA) solicitation/award cycle. Began integration of sensor technology into prototype Remote Reconnaissance Tactical Vehicle (RSTV).
$2,958 Command and Control Imperative: Completed requirement analysis and technology assessment for synchronizing information in order to achieve a federated database capability, developed necessary algorithms, and initiated the prototype design. Developed Communications Program Plan and strategy for

the analysis and evaluation of DoD Mobile Network Radio programs. The analysis included verification modeling capability for mobile network radios to ensure they meet USMC requirements. Conducted analyses of potential candidate systems and prepared technical specifications for prototype system requirements. Completed the development of the Smart Tactical Jammer by expanding the spectrum of signals that can be attacked to include cellular and Personal Communications Systems (PCS). Initiated the development of a family of light weight expendable jammers using technology developed by the Cellular/PCS industry. Conducted analyses and developed a conceptual design for a Time Difference of Arrival (TDOA) system for precision location of communication transmitters. Initiated the development of software tools to provide USMC Commanders with decision support aids for battlefield decision making and programs to automatically generate, process and transfer Target List information to AFATDS and Contingency Theater Automated Planning System (CTAPS). Evaluated Commander's Critical Information Requirements Enhancement tools. Enhanced Unit Operation Center concept development.
$3,372 Logistics Imperative: Continued system development of Logistics Information Systems which focused on decision support tools and data warehousing. Decision support tool technology exploration through the BAA process included the use of neural networks, expert agents, mathematical modeling, spreadsheet modeling, and spares based modeling to increase visibility into the logistics picture. Data warehousing technologies included smart notification and data push, data warehouse modules to facilitate mining from mainframe legacy systems and technology to maintain data integrity, and web server architectures that can support both upper and lower command structures in a deployed environment. Developed bulk liquids technologies in support of future seabasing concept development, focused on innovation in packaging and distribution. Continued modeling and simulation support and technology development plan for future mission area analysis. Explored new technologies for high power density generators and deployable power distribution. Explored new technologies for expeditionary washdown. Supported transition of validated logistics equipment systems evolving through Advanced Warfighting Experiments.
$900 Training and Education Imperative: Continued Rapid Virtual Data Base development. Developed intelligent automated forces. Continued training technology concept development. Began Integrated Family of Simulators concept development. Initiated efforts in Small Unit Tactical Training (SUTT).
$12,478

FY 1999 Planned Program:

Maneuver Imperative: Continuation of the Joint Defense Airborne Reconnaissance Program Agency (DARPA)/USMC Reconnaissance, Surveillance and Targeting - Vehicle (RST/V). Fabricated and tested RST/V platform and began integration of survivability and sensor systems. Downselected to single contractor for fabrication, testing and test support for Reconnaissance, Surveillance and Targeting Vehicle. Conducted successful Critical Design Review with contractor. Purchased all critical components and began fabrication of two demonstrator platforms to be delivered 1Q FY 2000. Complete system configuration and began fabrication of technology demonstrator for the Light Armored Vehicle SLEP. Platform will be key enabler for SLEP program and will transition to Program Manager in FY 2000.

Firepower Imperative: Continue design and fabrication of OICW prototype. Analyze and evaluate Contingent Low Altitude Weapons System (CLAWS), formerly HUMRAAM. Develop the capability to fire the Shoulder Launched Multipurpose Assault Weapon (SMAW) from an enclosed space under Congressional plus up program. Develop a microwave-based weapons pairing system that enables direct weapons fire simulation in realistic battlefield conditions for the K-Band Testing Obscuration Pairing System

Command and Control Imperative: Continue to develop and demonstrate technologies to make decisions, communicate information, and expand knowledge in a high tempo, uncertain, and chaotic battlefield. These technologies will include large screen display technologies that are scalable for Battalion through Division and their appropriate Command Post environment. They will also include horizontal integration of software capabilities/modules such that the commander and his staff see a consolidated picture of the battlespace rather than segregated applications. Continue the effort to develop unique waveform technologies that provide low probability of detection/intercept for squad level communications.

Logistics Imperative: Continue to develop and demonstrate technologies to enhance MAGTF capabilities in operational and tactical logistics in the areas of CSS vehicles. The goal is to enable seabased logistics, a tailored presence ashore, and reduction in consumables. Program focus includes: CSSOC software and hardware system will be packaged for transition to the Unit Operations Center (UOC) program, to fully support the Personnel and Administration/Logistics, Supply and Embarkation (G4/G1) functionality of logistics command and control. Legacy system interfaces and joint interoperability will be demonstrated. Complete fabrication and testing of Logistic Vehicle System-Replacement (LVS-R) Advanced Technology Demonstrator in support of PMs acquisition strategy for LVS-R. Configuration and testing provided required data and reduced risk and cost while supporting future Milestone Decisions.

Training and Education Imperative: Continue to develop and demonstrate technologies to enhance the cognitive and higher-order abilities of Marine Warfighters. Efforts include: Development of the Closed Loop Artillery Simulator System (CLASS). Development of the Military Operations In Urban Terrain-Instrumentation System (MOUT-IS); conducted DT and transitioned technology to MOUT ACTD and Marine Corps Urban Warrior Advanced Warfighting Experiments (AWE). Continued to support transitions to acquisition.

Project Albert funds the development of data, concepts and tools of 21st Century Operations Analysis especially in the areas of non-linear and asymmetric warfare. The goal is to generate data to support warfighting hypotheses with emphasis on questions relating to urban warfare.

Portion of extramural program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 USC 638.

FY 2000 Planned Program:

Maneuver Imperative: Continue to develop and demonstrate technologies that enhance operational mobility and survivability of platforms of Marine units. Efforts include: Continue the Joint DARPA/USMC Reconnaissance, Surveillance and Targeting - Vehicle (RST/V). Conduct contractor testing and risk reduction through test-fix-test strategy of Reconnaissance, Surveillance and Targeting Vehicles. Testing will encompass Mobility, Survivability, Sensor, and Communications. Conduct Fabrication Review and Test Readiness Review for 2001 delivery to government. Continue testing of Technology Demonstrator for the Light Armored Vehicle SLEP. Conduct testing and transition findings to acquisition manager.

Firepower Imperative: Investigate technologies to increase accuracy, range, lethality, integration and timeliness of direct, indirect and close fires. Continue development and evaluation of Enhanced Target Acquisition and Location System (ETALS). Continue evaluation and integration of CLAWS. Begin development, integration and evaluation of Objective Crew Served Weapon (OCSW) System, a joint Army/USMC program.

Command and Control Imperative: Conduct demonstration of USMC Concept of Operations (CONOPS) and participate in Joint Testing for deployment of tactical digital radios. Continue the development and demonstration of advanced Human Computer Interfaces (HCI) devices for use in Command Operations Centers (COC's) and Command Centers (CC's) for workstations and handheld data processing and communication equipment. Continue horizontal integration of software modules/functionality for an aggregate view of the battlespace. Continue developing unique waveform squad level communications devices and extend it to company level for intra-level communications.

Logistics Imperative: Continue to develop and demonstrate technologies to enhance MAGTF capabilities in operational and tactical logistics in the areas of CSS vehicles. The goal is to enable seabased logistics, a tailored presence ashore and reduction in consumables. Program focus includes: transition of the CSSOC and mobile CSSOC system concept insertion efforts. Efforts include the technology demonstration of new concepts in expeditionary bulk liquids distribution systems, focused on Naval seamless operation from ship to objective. Insert advanced technology into Logistic Vehicle System Technology Demonstrator platform to demonstrate embedded diagnostics and reporting, enhanced mobility, and improved trafficability and payload handling. Perform system analysis and modeling of future assault support capabilities and assets. Conduct survey, initial analysis and preliminary design of advanced payload handling systems for USMC Logistic Vehicle System and Medium Tactical Truck, to include trailers and load management systems.

Training and Education Imperative: Continue to develop and demonstrate technologies to enhance the cognitive and higher-order abilities of Marine Warfighters. Efforts include: Development of the Closed Loop Artillery Simulator (CLAS). Development of the Military Operations In Urban Terrain-Instrumentation System (MOUT-IS).

		FY 94 Active Duty Enlisted			FY 95 Active Duty Enlisted			FY 96 Active Duty Enlisted			FY 97 Active Duty Enlisted			FY 98 Active Duty Enlisted		
		Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total
00XX		0	1	1	0	1	1	0	2	2			0			0
01XX	Personnel and Administration	1,395	7,946	9,341	1,275	8,124	9,399	1,323	8,438	9,761	1,120	8,603	9,723	1,285	7,861	9,146
02XX	Intelligence	55	1,332	1,387	49	1,241	1,290	107	1,482	1,589	74	1,360	1,434	117	1,528	1,645
03XX	Infantry	0	28,685	28,685	0	28,017	28,017	0	25,672	25,672	0	27,366	27,366	0	25,760	25,760
04XX	Logistics	199	3,230	3,429	214	3,315	3,529	273	3,151	3,424	241	3,343	3,584	318	2,950	3,268
05XX	Marine Air Ground Task Force (MAGTF) Plans													0	10	10
08XX	Field Artillery	0	3,911	3,911	0	3,698	3,698	0	3,322	3,322	0	3,480	3,480	0	3,312	3,312
11XX	Utilities	138	2,888	3,026	158	2,858	3,016	162	2,695	2,857	173	2,907	3,080	189	2,566	2,755
13XX	Engineer, Construction, Facilities and Equipment	167	7,593	7,760	242	7,617	7,859	246	7,251	7,497	265	7,811	7,876	252	6,820	7,072
15XX		18	95	113	0	1	1			0			0			0
18XX	Tank and Assault Amphibious Vehicle	0	2,292	2,292	0	2,412	2,412	0	2,360	2,360	0	2,494	2,494	0	2,342	2,342
21XX	Ordnance	49	3,519	3,568	46	3,549	3,595	81	3,659	3,740	59	3,692	3,751	79	3,462	3,541
23XX	Ammunition and Explosive Ordnance Disposal	59	1,557	1,616	62	1,580	1,642	99	1,483	1,582	80	1,596	1,676	112	1,422	1,534
25XX	Operational Communications	407	10,142	10,549	512	9,915	10,427	677	8,576	9,253	574	9,209	9,783	693	8,277	8,970
26XX	Signals Intelligence/Ground Electronics Warfare	72	1,525	1,597	94	1,536	1,630	155	1,730	1,885	122	1,617	1,739	200	1,828	2,028
28XX	Data/Communications Maintenance	117	3,400	3,517	115	3,451	3,566	130	3,744	3,874	116	3,636	3,752	143	3,953	4,096
30XX	Supply Administration and Operations	830	7,026	7,856	750	7,068	7,818	861	6,790	7,651	756	6,961	7,717	881	6,566	7,447
31XX	Traffic Management	100	539	639	89	497	586	79	503	582	84	536	620	70	487	557
33XX	Food Service	322	3,414	3,736	310	3,370	3,680	314	3,108	3,422	315	3,281	3,596	328	2,974	3,302
34XX	Auditing, Finance, and Accounting	209	1,296	1,505	210	1,262	1,472	192	1,186	1,378	193	1,261	1,454	181	1,146	1,327
35XX	Motor Transport	425	11,316	11,741	480	11,757	12,237	511	11,032	11,543	560	11,827	12,387	630	10,823	11,453
40XX	Data Systems	109	1,293	1,402	112	1,533	1,645	116	1,594	1,710	108	1,602	1,710	104	1,626	1,730
41XX	Marine Corps Exchange	21	136	157	19	125	144	14	124	138	16	131	147	14	121	135
43XX	Public Affairs	90	257	347	83	272	355	77	302	379	79	289	368	90	307	397
44XX	Legal Services	127	416	543	125	447	572	129	457	586	131	457	588	124	442	566
46XX	Visual Information	68	472	540	99	549	648	85	517	602	96	564	660	75	514	589
55XX	Music	85	520	605	86	554	640	109	591	700	97	596	693	119	600	719
57XX	Nuclear, Biological, and Chemical	23	625	648	27	602	629	37	636	673	29	652	681	31	599	630
58XX	Military Police and Corrections	202	3,736	3,938	210	3,782	3,992	247	3,754	4,001	244	3,859	4,103	259	3,694	3,953
59XX	Electronics Maintenance	45	1,377	1,422	56	1,393	1,449	76	1,463	1,539	69	1,484	1,553	79	1,444	1,523
60XX	Aircraft Maintenance	281	7,452	7,733	260	7,333	7,593	300	7,606	7,906	304	7,948	8,252	333	7,786	8,119
61XX	Aircraft Maintenance	15	4,358	4,373	37	4,220	4,257	78	4,598	4,676	52	4,318	4,370	102	4,686	4,788
63XX	Avionics	90	3,264	3,354	98	3,187	3,285	129	3,149	3,278	163	3,640	3,803	167	3,345	3,512
64XX	Avionics	125	2,542	2,667	116	2,356	2,472	130	2,427	2,557	122	2,344	2,466	137	2,471	2,608
65XX	Aviation Ordnance	107	2,241	2,348	119	2,196	2,315	130	2,171	2,301	117	2,185	2,302	178	2,307	2,485
66XX	Aviation Supply	228	1,589	1,817	228	1,503	1,731	213	1,499	1,712	210	1,435	1,645	222	1,420	1,642
68XX	Weather Services	28	263	291	28	268	296	30	292	322	30	292	322	35	281	316
70XX	Airfield Services	155	2,169	2,324	144	2,031	2,175	169	2,046	2,215	148	2,019	2,167	161	2,016	2,177
72XX	Air Control/Air Support/Antiair Warfare/Air Traffic Contro	73	1,916	1,989	94	1,890	1,984	137	1,797	1,934	119	1,836	1,955	126	1,701	1,827
73XX	Navigation Officer and Enlisted Flight Crews	2	239	241	6	212	218	8	261	269	7	229	236	8	247	255
84XX	Recruiter/Career Recruiter	9	465	474	9	463	472	8	478	486	8	482	490	6	391	397
85XX	Drill Instructor	0	1	1	0	1	1	0	3	3	0	2	2			0
98XX	Band	42	181	223	43	185	228	44	177	221	40	184	224	46	176	222
99XX	General Service Marine	523	13,626	14,149	587	13,387	13,974	1,102	15,457	16,559	800	13,772	14,572	1,034	16,061	17,095
		7,010	150,845	157,855	7,192	149,758	156,950	8,578	147,583	156,161	7,721	151,100	158,821	8,928	146,322	155,250

		FY 94 Active Duty Officer			FY 95 Active Duty Officer			FY 96 Active Duty Officer			FY 97 Active Duty Officer			FY 98 Active Duty Officer		
		Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total
00XX		2	2	4	39	194	233	1	0	1			0			0
01XX	Personnel and Administration	149	533	682	145	541	686	160	558	718	144	557	701	143	532	675
02XX	Intelligence	27	527	554	38	667	705	40	643	683	40	679	719	40	701	741
03XX	Infantry	0	2,250	2,250	0	2,119	2,119	0	2,051	2,051	0	2,170	2,170	0	2,129	2,129
04XX	Logistics	37	862	899	44	828	872	64	954	1,018	51	848	899	75	986	1,061
06XX	Communications Information Systems							51	659	710			0	56	738	794
08XX	Field Artillery	0	1,025	1,025	0	934	934	0	879	879	0	939	939	0	885	885
11XX	Utilities	2	41	43	2	40	42	2	38	40	2	39	41	3	37	40
13XX	Engineer, Construction, Facilities and Equipment	0	560	560	2	517	519	10	475	485	8	509	517	14	459	473
15XX		0	3	3	0	2	2			0	0	1	1			0
18XX	Tank and Assault Amphibious Vehicle	0	375	375	0	341	341	0	352	352	0	361	361	0	345	345
21XX	Ordnance	4	125	129	5	123	128	5	126	131	5	124	129	4	123	127
23XX	Ammunition and Explosive Ordnance Disposal	2	101	103	2	105	107	2	98	100	2	109	111	1	99	100
25XX	Operational Communications	40	577	617	39	513	552	1	19	20	42	510	552	0	19	19
26XX	Signals Intelligence/Ground Electronics Warfare	17	218	235	1	27	28	1	30	31	1	27	28	1	27	28
28XX	Data/Communications Maintenance	8	123	131	8	130	138	8	133	141	7	135	142	6	137	143
30XX	Supply Administration and Operations	35	577	612	35	539	574	48	540	588	39	558	597	56	566	622
31XX	Traffic Management	6	31	37	6	29	35	6	28	34	7	29	36	4	29	33
33XX	Food Service	3	38	41	3	40	43	3	43	46	3	42	45	4	42	46
34XX	Auditing, Finance, and Accounting	50	275	325	50	263	313	52	270	322	59	281	340	54	287	341
35XX	Motor Transport	24	379	403	28	368	396	33	304	337	33	388	421	36	302	338
40XX	Data Systems	28	264	292	29	261	290	3	40	43	27	277	304	1	40	41
41XX	Marine Corps Exchange	5	10	15	8	12	20	6	10	16	6	13	19	4	9	13
43XX	Public Affairs	18	65	83	19	65	84	23	84	107	23	79	102	24	87	111
44XX	Legal Services	31	426	457	30	424	454	32	402	434	34	401	435	33	391	424
46XX	Visual Information	4	15	19	3	15	18	4	15	19	5	14	19	3	16	19
55XX	Music	1	15	16	1	16	17	1	12	13	1	16	17	2	11	13
57XX	Nuclear, Biological, and Chemical	0	98	98	0	97	97	1	97	98	1	104	105	2	103	105
58XX	Military Police and Corrections	12	176	188	11	67	78	12	173	185	11	182	193	11	190	201
59XX	Electronics Maintenance	1	91	92	1	83	84	3	92	95	3	86	89	3	85	88
60XX	Aircraft Maintenance	22	306	328	22	308	330	22	331	353	23	315	338	21	341	362
63XX	Avionics	1	128	129	1	128	129	1	120	121	1	133	134	1	127	128
64XX													0	0	1	1
65XX	Aviation Ordnance	0	99	99	1	93	94	1	101	102	1	95	96	1	93	94
66XX	Aviation Supply	13	223	236	14	221	235	19	210	229	18	216	232	18	209	225
68XX	Weather Services	0	20	20	0	21	21	0	30	30	0	27	27	0	28	28
70XX	Airfield Services	1	32	33	1	34	35	1	37	38	1	35	36	1	37	38
72XX	Air Control/Air Support/Antiair Warfare/Air Traffic Contro	21	583	604	30	554	584	38	560	598	36	556	592	49	573	622
73XX	Navigation Officer and Enlisted Flight Crews	2	28	30	0	21	21	1	18	19	0	18	18	0	18	18
75XX	Pilots/Naval Flight Officers	10	5,024	5,034	11	5,043	5,054	42	4,950	4,992	29	5,081	5,110	62	4,857	4,919
84XX	Recruiter/Career Recruiter												0	0	4	4
98XX	Band	0	4	4	0	4	4	0	6	6	0	4	4	0	8	8
99XX	General Service Marine	70	943	1,013	56	1,182	1,238	96	1,549	1,645	89	1,222	1,311	123	1,367	1,490
		646	17,172	17,818	685	16,969	17,654	793	17,037	17,830	750	17,180	17,930	854	17,038	17,892

		FY 94 Reserve Enlisted			FY 95 Reserve Enlisted			FY 96 Reserve Enlisted			FY 97 Reserve Enlisted			FY 98 Reserve Enlisted		
		Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total
01XX	Personnel and Administration	526	1764	2,290	526	1,764	2,290	563	1,861	2,424	576	1,843	2,419			0
02XX	Intelligence	18	359	377	18	359	377	28	401	429	26	418	444			0
03XX	Infantry	0	7086	7,086	0	7,086	7,086	0	7,106	7,106	0	7,318	7,318			0
04XX	Logistics	37	1215	1,252	37	1,215	1,252	42	1,236	1,278	57	1,227	1,284			0
08XX	Field Artillery	0	1416	1,416	0	1,416	1,416	0	1,300	1,300	0	1,238	1,238			0
11XX	Utilities	16	683	699	16	683	699	25	719	744	31	704	735			0
13XX	Engineer, Construction, Facilities and Equipment	32	2892	2,924	32	2,892	2,924	37	2,887	2,924	44	2,848	2,892			0
15XX								0	1	1	0	1	1			0
18XX	Tank and Assault Amphibious Vehicle	1	829	830	1	829	830	0	772	772	0	756	756			0
21XX	Ordnance	12	834	846	12	834	846	12	901	913	10	908	918			0
23XX	Ammunition and Explosive Ordnance Disposal	3	368	371	3	368	371	5	407	412	4	392	396			0
25XX	Operational Communications	80	3279	3,359	80	3,279	3,359	105	3,217	3,322	109	3,100	3,209			0
26XX	Signals Intelligence/Ground Electronics Warfare	10	70	80	10	70	80	8	68	76	6	62	68			0
28XX	Data/Communications Maintenance	14	544	558	14	544	558	12	568	580	13	590	603			0
30XX	Supply Administration and Operations	189	2001	2,190	189	2,001	2,190	222	2,049	2,271	230	2,008	2,238			0
31XX	Traffic Management	7	76	83	7	76	83	7	93	100	4	97	101			0
33XX	Food Service	48	744	792	48	744	792	38	768	806	45	768	813			0
34XX	Auditing, Finance, and Accounting	21	82	103	21	82	103	26	87	113	17	76	93			0
35XX	Motor Transport	66	3717	3,783	66	3,717	3,783	82	3,797	3,879	100	3,798	3,898			0
40XX	Data Systems	14	92	106	14	92	106	16	133	149	20	165	185			0
41XX	Marine Corps Exchange	1	1	2	1	1	2	1	1	2	2	4	6			0
43XX	Public Affairs	4	21	25	4	21	25	6	27	33	4	23	27			0
44XX	Legal Services	11	42	53	11	42	53	16	35	51	14	35	49			0
46XX	Visual Information	1	15	16	1	15	16	4	21	25	1	17	18			0
55XX	Music	1	6	7	1	6	7	1	5	6	3	1	4			0
57XX	Nuclear, Biological, and Chemical	3	157	160	3	157	160	5	186	191	6	181	187			0
58XX	Military Police and Corrections	23	801	824	23	801	824	26	875	901	29	823	852			0
59XX	Electronics Maintenance	1	179	180	1	179	180	3	203	206	2	239	241			0
60XX	Aircraft Maintenance	36	860	896	36	860	896	26	856	882	27	789	816			0
61XX	Aircraft Maintenance	3	391	394	3	391	394	5	380	385	5	419	424			0
63XX	Avionics	9	254	263	9	254	263	8	248	256	8	241	249			0
64XX	Avionics	7	255	262	7	255	262	7	253	260	7	233	240			0
65XX	Aviation Ordnance	5	303	308	5	303	308	8	292	300	4	272	276			0
66XX	Aviation Supply	36	246	282	36	246	282	38	252	290	39	259	298			0
68XX	Weather Services	4	25	29	4	25	29	4	29	33	3	32	35			0
70XX	Airfield Services	28	308	336	28	308	336	28	345	373	27	361	388			0
72XX	Air Control/Air Support/Antiair Warfare/Air Traffic Contro	7	583	590	7	583	590	9	499	508	6	387	393			0
73XX	Navigation Officer and Enlisted Flight Crews	2	48	50	2	48	50	1	42	43	1	35	36			0
84XX	Recruiter/Career Recruiter	0	0	0	0	0	0	1	40	41	1	42	43			0
85XX	Drill Instructor	1	31	32	1	31	32	0	1	1	0	0	0			0
98XX	Band	0	1	1	0	1	1			0			0			0
99XX	General Service Marine	62	2376	2,438	62	2,376	2,438	71	2,799	2,870	50	3,013	3,063			0
		1,339	34,954	36,293	1,339	34,954	36,293	1,496	35,760	37,256	1,531	35,723	37,254			

		FY 94 Reserve Officer			FY 95 Reserve Officer			FY 96 Reserve Officer			FY 97 Reserve Officer			FY 98 Reserve Officer		
		Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total
01XX	Personnel and Administration	35	97	132	91	98	189	88	110	198	92	110	202			0
02XX	Intelligence	14	155	169	21	201	222	21	197	218	20	219	239			0
03XX	Infantry	0	543	543	0	637	637	0	686	686	0	666	666			0
04XX	Logistics	12	181	193	14	210	224	19	216	235	17	214	231			0
06XX	Communications Information Systems										21	248	269			
08XX	Field Artillery	0	257	257	0	325	325	0	332	332	0	338	338			0
11XX	Utilities	0	19	19	1	17	18	0	16	16	0	15	15			0
13XX	Engineer, Construction, Facilities and Equipment	0	148	148	1	180	181	1	189	190	0	185	185			0
15XX		0	1	1			0			0			0			0
18XX	Tank and Assault Amphibious Vehicle	0	101	101	0	116	116	0	98	98	0	104	104			0
21XX	Ordnance	0	20	20	0	23	23	0	21	21	0	19	19			0
23XX	Ammunition and Explosive Ordnance Disposal	1	13	14	1	13	14	1	10	11	1	11	12			0
25XX	Operational Communications	16	177	193	17	212	229	16	216	232	3	9	12			0
26XX	Signals Intelligence/Ground Electronics Warfare	7	26	33	2	5	7	2	9	11	2	7	9			0
28XX	Data/Communications Maintenance	0	19	19	0	21	21	1	21	22	1	19	20			0
30XX	Supply Administration and Operations	16	172	188	19	205	224	23	224	247	24	216	240			0
31XX	Traffic Management	0	2	2	0	2	2	1	2	3	1	1	2			0
33XX	Food Service	0	1	1	1	1	2	1	2	3	1	2	3			0
34XX	Auditing, Finance, and Accounting	11	44	55	15	51	66	13	60	73	8	53	61			0
35XX	Motor Transport	8	108	116	10	120	130	9	138	147	9	136	145			0
40XX	Data Systems	6	44	50	8	50	58	7	53	60	0	4	4			0
41XX	Marine Corps Exchange	1	1	2	1	1	2	1	1	2	1	0	1			0
43XX	Public Affairs	3	10	13	6	15	21	9	16	25	8	21	29			0
44XX	Legal Services	12	162	174	13	206	219	13	207	220	16	213	229			0
46XX	Visual Information	1	0	1	3	1	4	4	2	6	3	2	5			0
55XX	Music	0	0	0	0	0	0			0			0			0
57XX	Nuclear, Biological, and Chemical	0	21	21	0	22	22	0	28	28	0	32	32			0
58XX	Military Police and Corrections	8	58	66	9	71	80	8	72	80	7	66	73			0
59XX	Electronics Maintenance	0	10	10	0	11	11	0	11	11	0	11	11			0
60XX	Aircraft Maintenance	5	53	58	7	65	72	11	74	85	11	75	86			0
61XX	Aircraft Maintenance	0	0	0	0	0	0			0			0			0
63XX	Avionics	0	20	20	0	17	17	0	13	13	0	11	11			0
64XX	Aviation Ordnance	0	0	0	0	0	0			0			0			0
65XX	Aviation Supply	0	16	16	0	15	15	0	16	16	0	17	17			0
66XX	Weather Services	2	47	49	4	57	61	6	54	60	8	49	57			0
68XX	Airfield Services	0	0	0	1	1	2	0	1	1	0	1	1			0
70XX	Air Control/Air Support/Antiair Warfare/Air Traffic Contro	0	9	9	0	9	9	0	8	8	0	7	7			0
72XX	Navigation Officer and Enlisted Flight Crews	9	165	174	13	206	219	14	226	240	14	205	219			0
73XX	Pilots/Naval Flight Officers	2	6	8	3	6	9	1	4	5	1	4	5			0
75XX	Recruiter/Career Recruiter	0	666	666	0	811	811	0	842	842	0	850	850			0
98XX	Band	0	1	1	0	1	1			0			0			0
99XX	General Service Marine	8	256	264	14	363	377	16	357	373	17	317	334			0
		177	3,629	3,806	275	4,365	4,640	286	4,532	4,818	286	4,457	4,743			

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